

UDC 621.899

NEW LUBRICANT COMPOSITIONS FOR HIGH-POWERED AUTOTRACTOR DIESELS BASED ON REGENERATION OF PROCESSED MOTOR OILS

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The recovery of a large amount of lubricant oils, in particular the repetitive use of engine oils, also makes it possible to solve two important economic and ecological problems. The ability to use refined oils as a base oil depends on the quality of the original oil. Various functional additives and additive packages for high-powered autotractor diesels based on the regeneration products of the following sample (6000 hours) of the low-lime high-quality Mysella-40 oil (6000 hours) are SAP-2055z, AMГ-3, MX-3103, ДФ-11,С- 150, AKI-150, K-48MД, and new lubricating compositions for diesel engines, which are working in a breathless, reinforced and high-strength environment.

Keywords: additive, additive package, lubricant composition, regeneration, oxidation, corrosion

In the production of lubricants, it is not always possible to obtain high quality lubricants that meet traditional requirements for exploitation and environmental protection.

In modern times, economical and politically significant benefits are achieved by reducing the amount of high quality additives that provide their functional properties, depending on the quality of lubricants. Thus, in the past part of lubricant additive compositions took 5-12%, sometimes up to 15%, although it is sometimes different from the refining process extensive treatment, hydrocracking, catalytic cracking from the amount of the base oils and 2,6-3% of additive package, it is possible to create a high-fat groups.

Low-kinematic viscosity and high viscosity indexes are not needed for polymer based polymeracrylate type glucose additives, and mechanical and thermal decomposition does not occur during oil exploitation. The solution of these issues requires the right choice in both cases.

The article applies to results of studies on the creation of new motor oil analogs based on the base oils derived from petroleum products of different origin and on their basis working in blow and blow-less conditions for powered and high-powered diesel engines.

The experience of recent years shows that use of engine oils as a base oil of regeneration products is important and economically effective.

New generation stationary gas engines in developing environmental legislation needs to must meet the requirements of disposing nitrogen oxides in the atmosphere and "weak and clean burning".

Energy producing Modular Power Stations of various regions of the country with high-speed spark diesel engines use low-ash high quality Shell Mysella LA oil.

There are 4 types of Mysella oils from Shell. These oils have close to same viscosity and density, the alkali number, sulfur ash and its active elements are characterized by varying degrees of ignition and freezing temperatures.

In the process of exploitation of Mysella-40 oil samples were taken over different hours (1000-6000 hours) and their oxidation and corrosion properties were determined by determining their important physical, chemical and exploitation properties. Table 2 shows the initial and an exemplary sample of 6000 hours of Mysella-40 commodity oil laboratory tests that were carried and physical-chemical properties were shown.

Table 1

Physical and chemical indicators of different types of Mysella-40 oil

Indicators	Mysella-40	Mysella LA 40	Mysella LA 15W40	Mysella MA 40	ASTM method
Product code	407-177	407-398	407-176	407-174	
Density, 15 ⁰ C (kg / m ³)	882	892	879	882	D1298
Kinematic viscosity, mm ² / s, 40 ⁰ C 100 ⁰ C	139 14.0	139 14.0	108.5 14.3	147 14.8	D445 D445
Freezing temperature, ⁰ C	-18	-18	-33	-30	D97
Flash point ⁰ C, in opened tester, ⁰ C	274	230	218	246	D92
Amount of sulfate ash, %	0.01	0.45	0.45	0.8	D874
Alkaline number, mg KOH/g	1.1	5.2	5.0	7.7	D2896
Mass fraction of active elements,%					
Zink	0	0.030	0.030	0.030	AA / ICP
Phosphorus	0.02	0.028	0.028	0.028	AA / ICP
Calcium	0	0.12	0.12	0.25	AA / ICP

Table 2

Mysella-40 commodity and exhaust oil indicators of physical, chemical and exploitation properties

Indicators	Mysella-40 commodity oil	Mysella-40 exhaust sample, 6 000 hours
Kinematic viscosity, mm ² / s, 40 ⁰ C 100 ⁰ C	141,66 13.78	157,38 15, 29
Indication index	92	98
Alkaline number, mgKOH / g	4,32	0.92
Amount of sulfate ash,%	0.43	0, 52
Flash point, ⁰ C, in opened tester	226	2 40
Freezing temperature ⁰ C	Negative 15	Negative 15
Corrosion, lead boards, g / m ²	3.0	141.2
Depending on the induction period of sedimentation, in continuity,%	0.32 (40 hours)	0.49 (30 hours)
Mass fraction of mechanical mass,%	0.13	0, 46
Color ICHT colorimeter in the TSP unit (thinned 15:85)	8.0 Unassembled	> 8.0

As you can see, the results are very different compared to the initial quality of the oil. So, after that time kinematic viscosity of 6000, an increase of 15.29 mm²/s, sulfuric ash content of 0.52%, compared to the flash point temperature of the components of volatile oil the evaporative 240⁰C, the mechanical mixture increases from 0.13% to 0.46%.

In the diluted version of the initial oil, if the color is 8.0 ЦНТ unit, after the oxidation process is > 8.0 ЦНТ unit.

Despite the aforementioned, the other indicators, such as the viscosity index, the amount of precipitation that occurred during the oxidation (0.49% for 30 hours), the freezing temperature, the ambient temperature and so on, it is realistic to re-apply the recycled sample of Mysella-40 oil and use it as a base oil based on its products.

Mysella-40 oil regeneration technology has been developed by analyzing the regeneration methods of motor oils employed in different mechanisms. Regeneration technology was made with the following example of the Mysel-

la-40 oil after 6000 hours of operation. Exploitation of Mysella-40 oil results in neutralization of oxidation, corrosion and other a reduction in the amount of appropriate additives used to neutralize oxidation, corrosion and other unpleasant acid products resulting in a decrease in the amount of appropriate additives consumed (Table3).

The use of regeneration products as a base oil is economically and ecologically important.

Using M-8, M-10 distillates from Azerbaijani oils as base oil as a continuation of a series of M-10Г₂, M-1010Г₂k [1,2] oils generated for diesel engines working in different modes known with regeneration products of Mysella-40 oil various additives and additives package АМГ-3, ДФ-11, С-150, АКИ-150, SAP-2055z, MX-3103 К-48МД and others with new lubricant compositions have been created in accordance with the requirements of GOST (State Standard) 8581-78, which works in blinking and breathless, reinforced and high strength conditions [3,4].

Table 3

Important physical-chemical indicators of regeneration product

Indicators	Regenerated oil sample
Kinematic viscosity, mm ² / s, 40 ⁰ C 100 ⁰ C	111.22 12.05
Indication index	97
Alkali number, mgKOH / g	0.03
Amount of sulfate ash,%	0.2
Flash point, ⁰ C, in opened tester	245
Freezing temperature ⁰ C	Negative 15
Corrosion , lead boards, g / m ²	124
Depending on the induction period of sedimentation , duration , sediment, %, IPO	0.58 (30) hours
Mass fraction of mechanical mass,%	There is no
Mass of water,%	There is no
Density, 20 ⁰ C, kg / m ³	890
Color ЦНТ colorimeter, ЦНТ unit (thinned 15:85)	3.5

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İŞLƏNMİŞ MOTOR YAĞLARININ REGENERASIYA MƏHSULU ƏSASINDA GÜCLƏNDİRİLMİŞ VƏ YÜKSƏK GÜCLƏNDİRİLMİŞ AVTOTRAKTOR DİZELLƏRİ ÜÇÜN YENİ SÜRTGÜ KOMPOZİSİYALARI

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Böyük həcmdə istifadə edilən sürtgü yağlarının, xüsusən motor yağlarının işlənmiş nümunələrinin təkrar tətbiqinin bərpası, eyni zamanda iqtisadi və ekoloji cəhətdən iki mühüm problemin həllini mümkün edir. İşlənmiş motor yağlarının regenerasiyası ilə alınan məhsullardan baza yağı kimi istifadə etməyin mümkünlüyü ilkin yağın keyfiyyət göstəricilərindən asılıdır. Aşağıküllü yüksəkkeyfiyyətli Mysella-40 yağının müəyyən müddət işlədikdən (6000 saat) sonrakı nümunəsinin regenerasiya məhsulu əsasında avtotraktor dizelləri üçün müxtəlif funksional xassəli aşqar və aşqar paketləri, AMГ-3, МХ-3103, ДФ-11, С-150, АКІ-150, SAP-2055z, К-48МД ilə üfurmə və üfurməsiz, gücləndirilmiş və yüksək gücləndirilmiş şəraitdə işləyən dizel mühərrikləri üçün yeni sürtgü kompozisiyaları yaradılmışdır.

Aşqar sözlər: aşqar, aşqar paketi, sürtgü kompozisiyası, regenerasiya, oksidləşmə, korroziya

НОВЫЕ СМАЗОЧНЫЕ КОМПОЗИЦИИ ДЛЯ ФОРСИРОВАННЫХ И ВЫСОКОФОРСИРОВАННЫХ АВТОТРАКТОРНЫХ ДИЗЕЛЕЙ НА ОСНОВЕ ПРОДУКТА РЕГЕНЕРАЦИИ ОТРАБОТАННЫХ МОТОРНЫХ МАСЕЛ

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Восстановление и ввод в повторную эксплуатацию отработанных смазочных масел, и, в частности, моторных масел, используемых в большом количестве, решает сразу две важные проблемы - экологическую и экономическую.

Возможность использования в качестве базового масла продуктов регенерации отработанных моторных масел в первую очередь зависит от качественных показателей первичного масла.

На основе продукта регенерации отработанного (в течение 6000 часов) высококачественного низкотемпературного масла Mysella-40, а также присадок и пакетов присадок различного функционального действия - AMГ-3, МХ-3103, ДФ-11, С-150, АКІ-150, SAP-2055z, К-48МД, были созданы новые смазочные композиции для работающих с наддувом и без наддува, форсированных и высокофорсированных дизельных двигателей.

Ключевые слова: присадка, пакет присадок, смазочная композиция, регенерация, окисление, коррозия