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ASSESSMENT OF THE EFFECT OF VARIOUS BRANDS OF GRAPHITE FILLERS ON SURKOV OILS

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ABSTRACT: The aim of the study is to study the influence of graphite markers of Surkov moyligs and their angles on the tribological characteristics of the ego of Surkov moyligs of ishlab Chikishdan. Graphite and uning modifications of high-quality alloys that bond the natural properties of Surkov alloys have different effects. Concentration and dispersion of the effect of the solvent-lithium surkov moining tribological characteristic as an alkalizing agent contact form of silicon carbide crack in the solvent and dispersion spectacular effect confirming the hypothesis. While other times it's just about what happens between them, other times it's about what happens between them, not what happens between them.

KEY WORDS: graphite, filler, thickener, lubricating oil, tribological properties, rheological properties, thermostability.

Introduction.

Usually, the reliability of the technique and impeccable performance over long periods of time depend on the quality and timely supply of surkov oils used in harsh cases, the most important place among which is occupied by plastic surkov oils. In practice, the production of surkov oils does not depend on the low volume (25-30 times less than in oil oils), their role in ensuring the operation of various machines, mechanisms and equipment in one standard is very incomparable. In addition to the fact that the use of high-quality surkov oils in maintenance leads to significantly (a hundred times) less consumption than oil oils, it reduces the absorption of machine and mechanism parts, ensures the rigidity of the structure, prolongs the resources and the period of use of tshz in the pulp, which in turn reduces the cost of production chiarization. For this reason, the study of their extraction, composition, properties and optimal conditions of use in the widespread use of plastic surkov oils in practice is currently one of the most important directions in both theory and practice [1-2].

Object and methods of research.

As you know, in surkov oils with a different thickening nature, the effectiveness of fillers and landings is manifested in different ways.In this regard, the effect of graphite fillers of the brands GS-1 and GS-4 on various surkov oils was assessed: lithium surkov oils, calcium complex surkov oils and silica gel surkov oils [3].

The basis for the experiment was prepared surkov oil, then a graphite filler (10% of the mass) was added to it, which was transferred from a three-shaft grinder machine.

Results and their discussion.

The results of the rheological properties of the resulting surkov oils are presented in Table 1 [4].

Table 1. Rheological properties of surkov oils with the addition of graphite fillers of the brands

GS-1 and GS-4 (10% of the mass).

Pointers	Lithium surkov oil			Calcium or the moya marmot complex			Silica gel surkov oil		
	-	GS -1	GS -4	-	GS -1	GS -4	-	GS -1	GS -4
1. Slip strength limits 10 c^{-1}, Pa,									
20 ºC	690	650	720	1520	1350	1680	650	620	810
50 ºC	440	400	500	740	610	1040	540	540	600
80 ºC	310	310	320	410	550	750	450	450	560
2. Effective fluidity D =10 c^{-1}, Pa•s,									
0 ºC	175	182	220	160	200	340	195	188	240
20 ºC	160	160	160	90	94	250	140	110	180
50 ºC	76	78	76	44	70	90	96	75	100
3. Colloidal stability, %	15,2	13,1	13,3	5,0	2,4	2,5	6,2	5,0	4,7

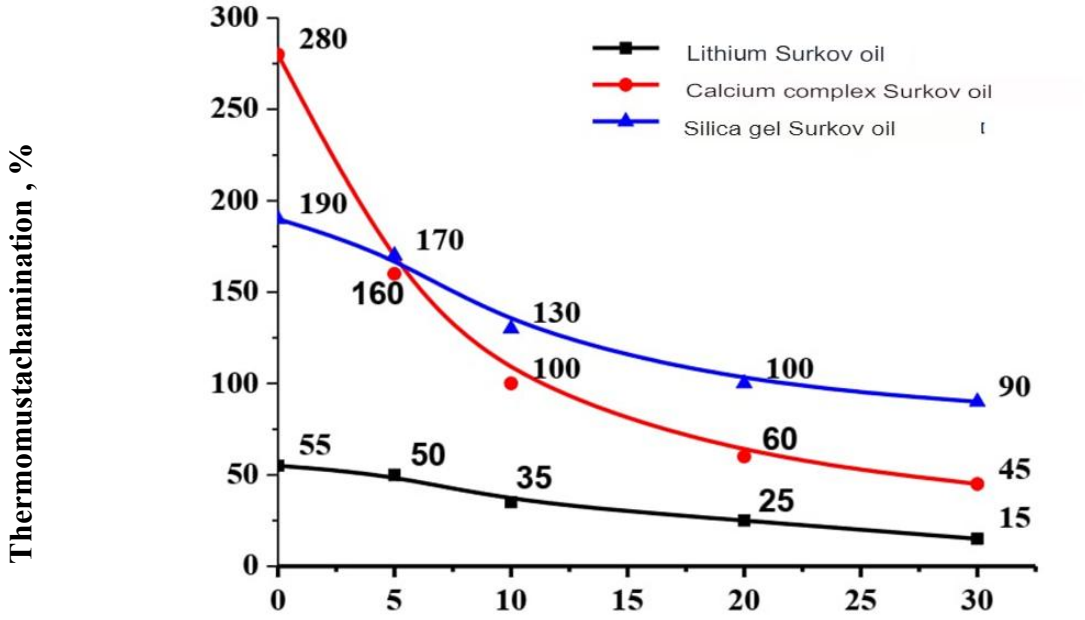
In assessing the rheological properties of surkov oils of different thickening nature (lithium surkov oil, calcium complex surkov oil, silica gel surkov oil) and in the 10% concentration of commodity graphite varieties GS-1 and GS-4 by weight, the following results were obtained (Table 1):

- with the introduction of graphite additives, the strength limits of lithium surkov oils to the displacement have changed slightly, with the addition of graphite, calcium complex surkov oil and silica gel surkov oil have also had a weak effect on this indicator, and for GS-4 brand graphite, this effect is somewhat noticeable, which can be explained by the high dispersion of gsant-4;

- the effective viscosity of lithium surkov oils does not change for both graphite additives, and the calcium complex increases significantly in surkov oil and silica gel surkov oils with GS-4 brand graphite compared to GS-1 brand graphite for surkov oils, as well as the different dispersion of these additives;

- the colloidal stability of lithium surkov oils and silica gel surkov oils with graphite additives is slightly different, and both brands of graphite in calcium complex surkov oils reduce this indicator by 2 times.

In assessing the effect of GS-4 brand graphite concentrate on thermomustaxking of surkov oils with different thickening nature (Figure 1), the effectiveness of the supplement in surkov oils increased as follows: silica gel surkov oil < lithium surkov oil< calcium complex surkov oil.



GS-4 brand graphite concentrate, %

Figure 1. The effect of graphite concentrate on thermomustaxing of various types of thickening surkov oils (in%).

The results of the assessment of the tribological properties of Surkov oils are presented in Table 2.

Table 2. Tribological properties of surkov oils with the addition of graphite fillers of the brands GS-1 and GS-4 (10% of the mass.)

Pointers	Lithium surkov oil			Calcium complex surkov oil			Silica gel surkov oil		
	-	GS -1	GS -4	-	GS -1	GS -4	-	GS -1	GS -4
1. Four-ball machine TSHM:									
sharp loading, N	630	750	790	790	890	910	530	890	890
welding Load, N	1260	2720	3360	200	2860	3250	1120	1680	2000
zadir index, N	340	460	530	730	780	840	250	380	410
392 n loading wear stain diameter, mm	1,10	0,80	0,75	0,65	0,70	0,65	1,20	1,05	1,00
2. SRV vibration meter:									
eznatilgan shchelanish coefficient	0,16	0,21	0,18	0,19	0,25	0,23	0,22	0,25	0,24
coil diameter, microns	1,3	1,9	1,7	1,2	1,5	1,5	1,8	2,3	2,1
3. Falex-1 machine gun: - load capacity, N	Not separated	2540	3160	1970	4160	5780	Not separated	1970	2540

In assessing the tribological properties of surkov oils with the addition of graphite fillers, it was found that:

-when tested for TSHM in lithium surkov oils, graphite additives of the brands GS-1 and GS-4 improve the performance of Rk, iz, Di, and significantly increase the performance of RS. In the SRV vibrotribometer, both the coefficient of friction and the Di index for surkov oils with the addition of graphite fillers deteriorate, which can be explained by the heterogeneity of the lubrication layer in the contact zone. Lubricants with additives in the falex-1 friction machine increase the load capacity, and for GS-4 brand graphite lubricants, this indicator is large;

- when calcium complex surkov oil is tested in Tshm, the introduction of fillers increases the indicators of Rk, RS, trace, and does not affect the Di indicator. Adding GS-4 brand graphite is more effective than adding GS-1 brand graphite in all its properties.

When SRV is tested on a vibrotribometer, the performance of surkov oils with the addition of graphite absorbers is worse than surkov oils without additives.

The load capacity of surkov oils with the addition of GS-1 brand graphite on the Faleks-1 friction machine is 2 times higher than when the filler is not added, and 3 times higher when adding GS-4 brand graphite. When silica gel surkov oils were tested in TSHM RK, RS and iz, the performance was improved and the Di performance was virtually unchanged.

The results of the resulting study show the effectiveness of the GS-4 branded filler. In addition, the effectiveness of the filler is more relevant in lithium surkov oils. Therefore, in our further research, we observed the effect of the graphite filler of the GS-4 brand in lithium surkov oils.

Conclusion.

The conclusions of the research work carried out on the study of small dispersion graphite and its modifications as an antifriction additive to surkov oils are as follows: thanks to the use of graphite and its modifications as a filler or thickener, new scientific and experimental results have been obtained that allow the, development of lubricants with high tribological

properties;
the effect of graphite fillers and its modifications on the properties of surkov oils of different nature was studied. In the study of the effect of the concentration and dispersion of the filler-the working hypothesis on the effectiveness of the degree of dispersion of fillers depending on the contact form of the friction pair for the tribological properties of lithium surkov oil was confirmed. This effect is negligible if the contact is only at one point, and the anti-wear properties are improved with an increase in dispersion level if the contact is linear and flat.

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