"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I.V.

Komu prinadleshit priortet vnedreniia chistovoi obrabotki poverkhnostei rolikami?
Vestn. Mash., 1950, no. 9, p. 66.

Refers to "Krasnoe Sormovo" plant.

Who can claim the priority in introducing the roller method for surface finish?

DLC: TN4.V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I. V.

Nomogramma k raschetu parovozdushnykh molotov. (Vestn. Mash., 1951, no. 7, p.44-48)

Includes bibliography.

(Nomographic chart for calculations of air-steam hammers.)

DLC: TN4.V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, Ivan Vasil'yevich

(Gor'kiy Polytechnic Inst imeni Zhdanov), Academic degree of Doctor of Technical Sciences, based on his defense, 6 April 1955, in the Council of the Inst of Machine Science of the Acad Sci USSR, of his dissertation: "The theory of exhaust hammers and their calculation by the most favorable parameters."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 17, 9 July 1955, Byulleten' MVO SSR, No. 17, Sept 1956, Moscow, pp 9-16, Uncl. JPRS/NY-435

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, IVAN VASIL'YEVICH,

PHASE I BOOK EXPLOITATION 559

Klimov, Ivan Vasil'yevich, Doctor of Technical Sciences, Professor

Osnovy teorii i teplovogo rascheta parovozdushnykh molotov (Fundamentals of the Theory and Thermal Design of Steam Hammers) Moscow, Mashgiz, 1958. 147 p. 4,000 copies printed.

Ed.: Mezhova, V.A., Engineer; Tech. Ed.: El'kind, V.D.; Managing Ed. for literature on heavy machine building (Mashgiz): Golovin, S. Ya.

PURPOSE: This book is written to facilitate design of high-efficiency, economical steam hammers and to improve the operation of those now in use. The book can be used by scientific and technical workers, mechanics in forges, and by students of vuzes.

COVERAGE: This monograph discusses fundamentals of the theory of steam hammers and generalizes and develops the works of professors Time, I.A., Markovich, Ya. N. and Zmin, A.I. Designs of steam hammers with optimum power parameters are given. There are 9 references, all Soviet.

Card 1/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

TABLE OF CONTENTS:

I. Fundamentals of the Theory and Thermal Design of Steam Hammers 3

Work performed by the steam during piston upstroke 7

Analytical derivation of equations for the work done by all forces for different conditions of piston upstroke 12

Work performed by the steam during piston downstroke 20

Analytical derivation of equations for the work done by all forces for different conditions of piston downstroke 28

Analysis of balance equations for the work done by all forces at a blow of maximum energy for various steam hammers 34

II. Nomograms for Investigation and Design of Steam Hammers 56

Universal nomogram No. 1 for solving the balance equation (30) for work done by all forces at piston upstroke in steam forging hammers, drop hammers and hammers without anvil block 56

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

Nomogram No. 2 for solving the balance equation (61) for work done by all forces at an automatic blow of maximum energy in hammers with automatic steam distribution 73

Nomogram No. 3 for solving balance equation for work done by all forces in the piston's first idle downstroke in a steam drop hammer 85

III. Examples of Designing Steam Hammers

Design of a forging hammer with automatic steam distribution and a regular cylindrical slide valve 106

Effect of the forging's height on the operation of a hammer with automatic steam distribution 115

Design of a steam drop hammer 123

Design of a drop hammer with adjustable anvil 137

Conclusion 145

Bibliography 149

AVAILABLE: Library of Congress

GO/ksv
8-27-58

Card 3/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I.V.; SEMENOV, K.V.; KLYUSHENKOV, L.N.

KSK-1 indicator for the oscillography of hammer operations.
Kuz.-shtam.proizv. 5 no.4:37-39 Ap '63. (MIRA 16:4)
(Forging machinery) (Oscillography)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I.V., inzh.

Draining and bringing under cultivation the swampy soils in the north. Gidr. i mel. 16 no.4:56-59 Ap '64. (MIRA 17:6)

1. Arkhangel'skaya opytno-ameliorativnaya stantsiya.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I.V., doktor tekhn. nauk, prof.

Design of crank presses. Vest. mashinostr. 45 no.5:52-53 My '65.
(MIRA 18:6)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I.Ye., inzhener

Mine cableway operation practices. Gor.zhur. no.7:43-48 Jl '55.
(Mine haulage) (MLRA 8:8)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I.Ye.

Improve the planning of suspended cableways. Gor.shur. no.9:51-53 S '57. (MIRA 10:9)

1. Glavnyy inzhener kanatnoy dorogi Tyrnyauzskogo kombinata.
(Cableways)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, I.Ye.; LEVENBERG, I.Ye.

Observing safety measures in designing cableways. Bezop.truda v prom. 2 no.9:12-14 S '58. (MIRA 11:9)

1.Glavnyy inzhener kanatnykh dorog Tyrny-Auzskogo kombinata (for Klimov). 2.Nachal'nik montazhnogo tsekha tresta Soyuzpromzekhanizatsiya (for Levenberg).

(Cableways)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, Igor' Yevdokimovich; CHAYKUN, M.I., otv.red.; SILINA, L.A., red.izd-va; GALANOVA, V.V., tekhn.red.

[Design and operation of aerial cableways] Ustroistvo i ekspluatatsiia podvesnykh kanatnykh dorog. Moskva, Gosgortekhizdat, 1960. 108 p. (MIRA 14:2)
(Cableways)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

NIKITIN, A.I., prof., otv.red.; DOBYCHIN, B.D., prof., zam.otv.red.; ABRAMOV, K.T., kand.med.nauk, red.; KAZANTSEV, A.I., prof., red.; TIMOFEYEV, S.I., prof., red.; KHODOS, Kh.B., prof., red.; BOLOTOV, M.P., prof., red.; SHERSHNEV, P.A., prof., red.; VAYS, S.I., prof., red.; [redacted] dotsent, red.; SEMENOV, V.V., dotsent, red.; DONSKOV, V.V., dotsent, red.; KARNAKOV, B.I., dotsent, red.; KRAKAU, S.I., red.

[Collection of works of the Irkutsk State Medical Institute devoted to its 40th anniversary] Sbornik trudov Irkutskogo gosudarstvennogo meditsinskogo instituta, posvisshchennyi 40-letiiu so dnia ego osnovaniia. Irkutsk, 1959. 442 p. (MIRA 14:1)

1. Russia (1917- R.S.F.S.R.) Ministerstvo zdravookhraneniya. 2. Zaveduyushchiy kafedroy normal'noy fiziologii Irkutskogo meditsinskogo instituta (for Nikitin). 3. Zaveduyushchiy fakul'tetskoy khirurgicheskoy klinikoy Irkutskogo gosudarstvennogo meditsinskogo instituta (for Dobychin). 4. Zaveduyushchiy kafedroy biokhimii Irkutskogo meditsinskogo instituta (for Shershnev). 5. Zaveduyushchiy kafedroy propedevtiki vnutrennikh bolezney Irkutskogo meditsinskogo instituta (for Karnakov).
(MEDICINE)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

NIKITIN, A.I., prof., otv. red.; DOBYCHIN, B.D., prof., zam. otv. red.; ABRAMOV, K.T., dots., red.; KAZANTSEV, A.I., prof., red.; TIMOFEYEV, S.I., prof., red.; KHODOS, Kh.B., prof., red.; BOLOTOV, M.P., prof., red.; SHERSHNEV, P.A., prof., red.; VAYS, S.I., prof., red.; KLIMOV, K.A., dots., red.; SEMENOV, V.V., dots., red.; KARNAKOV, B.I., dots., red.;

[Materials on the influence of physical, chemical and biological factors on the animal and human organism]Materialy o vliianii fizicheskikh, khimicheskikh i biologicheskikh faktorov na organizm zhivotnykh i cheloveka. Irkutsk, 1961. 317 p. (MIRA 15:12)

1. Irkutsk. Gosudarstvennyy meditsinskiy institut. 2. Zaveduyushchiy kafedroy terapevticheskoy stomatologii Irkutskogo meditsinskogo instituta (for Vays). 3. Zaveduyushchiy kafedroy fakul'tetskoy khirurgii Irkutskogo meditsinskogo instituta (for Dobychin). 4. Zaveduyushchiy kafedroy infektsionnykh bolezney Irkutskogo meditsinskogo instituta (for Karnakov). 5. Zaveduyushchiy kafedroy normal'noy fiziologii Irkutskogo meditsinskogo instituta (for Nikitin).

(PHYSIOLOGY, PATHOLOGICAL)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I. (Moskva); LEONT'YEV, B.I. (Moskva); SINITSYN, V.V. (Moskva)

Effect of strain on the bulk mechanical properties of lubricating greases. Koll.zhur. 26 no.2:200-206 Mr-Ap '64. (MIRA 17:4)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

CA

22

Elastic-plastic properties of caseum greases. G. V. Vinogradov and K. I. Klimov. *Doklady Akad. Nauk S.S.S.R.* 57, 911-14(1947); cf. *C.A.* 40, 719i.—The mech. properties of Ca greases (mineral oil of high viscosity with 14.2% Ca soap from linseed oil and contg. 2% moisture) were detd. by the concentric-cylinder method. At loading of 1.18 g./sq. cm. plastic flow of the grease almost coasts, and the motion of the cylinder is reversed by the elastic reaction. The results are shown graphically. The residual deformation is destroyed in time exponentially.

G. M. Kosolapoff

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

VINOGRADOV, G. V. and [illegible], E. I.

"Modulus of Shear and the Limit of Ductility of Calcium Lubricants," Dok. AN, 58, No. 8, 1947

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

USSR/Petroleum Industry Jan 1948
Lubricants - Properties

"Mechanical Properties of Lubricants," G. V. Vinogradov, V. P. Pavlov, K. I. Klimov, 6½ pp

"Neft Khozyay" No 1

Discusses limited shear stresses in lubricants, and the "tiksotropy" of lubricants, study of the changes occurring in the dispersed systems of lubricants when they are acted on by constant shear stresses while they are flowing. Also discusses equipment and methods to determine the viscosity of lubricants. Authors grateful for aid given by Senior Technicians L. F. Kalmykov, Yu. A. Naumov, A. V. Yarmakhov, and Laboratory Technician A. D. Gerasimova.

PA 51T89

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

22

CA

Rheological properties of calcium greases. G. V. Vinogradov and K. I. Klimov.—*Zhur. Tekh. Fiz.* 18, 355-76 (1948); cf. *C.A.* 43, 4080b.—The kinetics of the elastic deformations of a solidol prepd. with a petroleum distillate and 14.2% Ca soap from cottonseed oil (2% H_2O, 0.8% free acid) were followed with a torsional elastometer by photographic recording. (1) With increasing shearing stresses τ (1.15, 2.20, 3.45, 4.60 g./sq. cm.) alternately applied and removed, the elastic strains γ are proportional to τ, i.e. Hooke's law is valid, with a modulus of shear $g = 8.4 \times 10^{-6}$ kg./sq. mm. at 10°. The time curves of direct and of reverse after action are sym.; the former can be represented by $\log \gamma = a + b \log (1 + t)$, where t = time. The after-action increases with τ, but remains weak below the yield point τ_1. The shape of the strain-time curves (at const. τ) changes markedly if, instead of the fused grease being poured into the app., and allowed to solidify, it is stirred in; in the latter case, direct and reverse afteraction become much more pronounced. After 24 hrs.' standing, there is a thixotropic recovery of structure. The same phenomena were observed with the standard ASTM stirring procedure. When τ is abruptly raised above τ_1, and the load removed, γ soars to a peak and then decreases slowly with time; presence of a residual irreversible deformation is demonstrated by accelerating the decay of reversible elastic afteraction through a temp. rise by 15°. The irreversible residual deformation does not arise abruptly, but develops gradually with increasing τ; the limiting τ_1 is a singular point on the $\gamma = f(\tau)$ curve, and characterizes the range where viscous flow becomes superposed on elastic strain. Systematic increase of g under the action of successive deformations at $\tau < \tau_1$ is demonstrated by analysis of photograms of alternate applications and removals of a const. τ; the same systematic increase of g is inferred also from photograms of γ under τ of alternately opposed signs, and from hysteresis figures. Alternating heating and cooling between 10 and 20° also result in an increase of g, i.e. increased strength. In analogy with the rate law of the direct afteraction (see above), the change with time of the difference $\gamma' = \gamma_{max.} - \gamma$, where $\gamma_{max.}$ is the max. strain attained at the moment of the removal of the load, obeys the law $\log \gamma' = c + d \log t$, where c and d are consts.; the deformation along the curves of reverse afteraction decreases according to $\gamma = e - f \log t$, where e and f are consts. These relations are confirmed by the corresponding exptl. plots. (2) The dependence $\gamma = f(\tau)$ was investigated, at 20°, on stirred solidol, with the load varied at a uniform rate; τ as a function of γ reaches rapidly a max. level, independent of the rate of torsion. After removal of the max. load, and 45 hrs.' rest, the max. τ is found considerably lowered, and the same low level of τ is found even after 2 weeks' rest; this demonstrates the irreversible structure change of the solidol due to the flow. The behavior of the grease can be qualitatively represented by a model consisting of 4 elements in series, (a) a spring representing the solid-body Hooke-law elasticity, (b) a spring in parallel with a piston moving in a viscous liquid, (c) a slide-block with a static friction coeff., representing τ_1, and (d) a piston in a viscous liquid, set in motion by that of c. (3) Reproducible (± 3.5%) and time-invariable values of τ_1 are obtained by the method of extrusion through metal capillaries with a triangular-section screw thread cut along its inner wall; examples of suitable dimensions are, inner diam. 7 or 3.5, length 30 or 60 mm. Values of τ_1 obtained by this method agree with those from $\gamma(\tau)$ curves in the torsional elastometer. With increasing temp. (10-60°) τ_1 decreases linearly. With increasing γ, i.e. in the course of flow, τ_1 decreases. Tech. petrolatum shows the same behavior, but with fibrous Na constalin τ_1 as a function of γ passes through a max. Further, unlike the solidols, the fall of τ_1 with increasing temp. for constalin and a mixed Ca-Na-soap grease is not linear.

N. Thon

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIBOV, K. I., Engineer, Lt-Colonel Cand Tech Sci

Dissertation: "Elastic-Plastic Properties of Consistent Lubricants."

26/10/50

Military Order of Lenin Academy of Armored and Mechanized Troops of the Soviet Army imeni I. V. Stalin

SO Vecheryaya Moskva
Sum 71

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

CA

12

Temperature characteristics of elastoplastic properties of greases. O. V. Vinogradov and K. I. Klimov. *Doklady Akad. Nauk S.S.S.R.* 71, 307-10(1950); cf. preceding abstr.—Samples of different types of greases, including Ca stearate-kerosine solids with 16% soap and 1.7 and 0.2% H_2O, a 10% Li stearate petroleum grease, and a short-fiber castor oil constain, obey Hooke's law at sufficiently low shearing stresses τ; the range of strain γ up to which that law holds increases with the temp. In the ideal range, the modulus of shear g of a variety of greases lies within the limits $1 \times 10^3 - 3 \times 10^3$ g./sq. cm. The temp. coeff. of g and of the yield point τ_1 (around 20°) is of the same order, mostly between 0.01 and 0.04/degree. The strain γ_1 corresponding to τ_1 is of the same order for short-fiber Na and Na-Ca greases as for smooth Ca and Li greases. When a grease is strained up to γ_1, it shows on repeated loading a τ_1' lower than the original τ_1; the difference $\tau_1 - \tau_1'$ is nearly independent of the temp. in a fairly broad temp. range. The sharpness of τ_1 increases with the temp., and τ_1' is sharper than τ_1. The change of τ_1 as a result of weakening by straining is paralleled by a similar change of g. This indicates that the same structure elements are responsible for the elastic properties and for the strength. These common structure elements are the soap fibers and their cross-links.

N. Thon

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

PROCESSES AND PROPERTIES INDEX

23

Viscosity and Shear Resistance of Lubricants. (In Russian.) G. V. Vinogradov and K. I. Klimov, Doklady Akademii Nauk SSSR (Reports of the Academy of Sciences of the USSR), new ser., v. 71, Apr. 1, 1950, p. 697-700.

Elastic-plastic properties of a series of lubricants were investigated by a specially developed method of concentric torsion of annular test specimens. Theoretical bases of the method are indicated. Data are charted and interpreted. Results are discussed.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K. I.

USSR/Chemistry - Lubricating Greases May 52

"The Rheological Properties of Bentonite Pseudogels," O. V. Vinogradov, V. P. Pavlov, K. I. Klimov, M. M. Gvozdev

"Dok Ak Nauk SSSR" Vol 84, No 2, pp 309-312

The properties of ag suspensions of Alk bentonite (ascangel from Tsikhis Ulani, Georgian SSR) were compared with a std lubricating grease, fatty solidol (mineral oil thickened with a calcium soap), and an oil pseudogel of aminated bentonite. It was shown that it is possible to obtain thickening clays producing effects similar to those produced in greases by soaps. States that the results also refute the viewpoint found in the literature that pseudogels contg thickening soaps and those contg. clays are different in nature. Presented by Acad A. V. Topchiyev 3 Mar 52

231T8

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K. I.

Chem abs VOT
1-25-54
general + Physical
Chemistry

(3)

The method of concentric shear in the study of elastic-plastic and strength properties of pastes and pseudogels. K. I. Klimov and O. V. Vinogradov (Inst. Petroleum, Acad. Sci. U.S.S.R., Moscow). *Kolloid. Zhur.* 15, 371-83 (1953).—The *app.* consists of an internal cylinder suspended on a vertical torsion wire and an immobile coaxial external cylinder. The annular space between the cylinders is filled with a lubricating grease. The torsion wire is twisted (once or continually), and the movement of the internal cylinder is recorded photographically. The max. shearing stress is thus detd. with an error of ±6%. I. J. Bikerman

6-19-54

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.

AID P - 1139

Subject : USSR/Chemistry

Card 1/1 Pub. 78 - 17/25

Authors : Klimov, K. I., Sinitsyn, V. V. and Aleyeva, Ye. A.

Title : Colloidal stability of consistent lubricants

Periodical : Neft. khoz., v. 32, #11, 62-67, N 1954

Abstract : The dependence of the colloidal stability of lubricants on their soap-content and on the viscosity of oil used in their preparation was investigated. The KSA apparatus (GOST 7142-54) was used in the experiments. Four tables, 3 charts and 6 Russian references (1938-1953).

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV K. [I.]

USSR/Chemical Technology. Chemical Products and Their Application -- Treatment of natural gases and petroleum. Motor fuels. Lubricants, I-13

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5574

Author: Klimov, K., Leont'yev, B.

Institution: None

Title: Method of Studying the Mechanical Stability of Solid Lubricants

Original Publication: Novosti neft. tekhniki. Neftepererabotka, 1955, No 3, 27-34

Abstract: The newly developed method consists in first subjecting the lubricants to shearing deformation under rigorously defined physical conditions, and thereafter, following the breakdown of the structure, a study is made of the volumetric-mechanical properties of the lubricants. Breakdown of lubricant structure was effected in a special unit, the principal portion of which is a rotary apparatus. Yield strength (YS) to shearing was determined by means of a K-2 apparatus designed by Klimov. Comparative study of YS of lubricants subjected

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of Natural Gases and Petroleum. Motor fuels. Lubricants. I-13

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12991

Author : Klimov K.I., Fomina A.M.

Title : Behavior of Oils, Thickened with Polyisobutylene, in Transmission Assemblies

Orig Pub : Novosti neft. tekhn. Neftepererabotka, 1955, No 6, 17-18

Abstract : Experimental use was made, in ZIS-151 and GAZ-63 cars, of transmission oil prepared by thickening of a mixture consisting of 53% summer nigrol and 47% arctic diesel fuel, with polyisobutylene (I) of molecular weight (MW) 24000, used in an amount of 3%. The automobiles traveled over 12000Km at air temperatures from +2 to -32°, with a change of oil after 6000 Km. It is shown that I of the given MW undergoes decomposition, and after a 6000 Km run, the viscosity of the oil, at 100°,

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.

USSR/Chemical Technology. Chemical Products and Their Application -- Treatment of natural gases and petroleum. Motor fuels. Lubricants, I-13

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5573

Author: Klimov, K. I., Leont'yev, B. I.

Institution: None

Title: Mechanical Stability of Lubricant Grease at Different Temperature

Original Publication: Novosti neft. tekhn. Neftepererabotka, 1955, No 6, 26-30

Abstract: By using an apparatus developed by the authors an investigation was made of changes in yield strength at 20° (τ_{nr}^{20}) of some lubricant greases on their breakdown in the gap between coaxial cylinders (gradient of displacement velocity 1,570 sec^{-1}) and subsequent relaxation. Rate of pumping of the lubricant through the rotational apparatus was maintained at 0.4 cm^3/second. Breakdown of the lubricants was effected at different temperatures: from -10 to 95°. It was found that change in τ_{nr}^{20}, i.e., mechanical stability (MS) of

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

USSR/Chemical Technology. Chemical Products and Their Application -- Treatment of natural gases and petroleum. Motor fuels. Lubricants, I-13

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5573

Abstract: fatty and especially of synthetic grease becomes worse with increasing temperature of breakdown. An analogous correlation between MS and temperature holds in the case of the Li-lubricant TsIATIM-201. Fatty Konstalin shows a maximum MS at 75-80°. At lower and higher breakdown temperature its MS becomes worse. Correlation between MS and temperature is attributed to change in viscosity of the lubricant, i.e., of hydrodynamic shearing stresses, that disintegrates structural elements, and also to a change in the strength of the structural elements with temperature. The non-uniform nature of the dependance of MS on temperature is associated with the different relative values of this factor in lubricants of different type.

Card 2/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.

USSR/Chemical Technology. Chemical Products and Their Application -- Treatment of natural gases and petroleum. Motor fuels. Lubricants, I-13

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5575

Author: Klimov, K. I., Vakurov, P. S.

Institution: None

Title: Yield Strength and Performance of Lubricants in Rolling Bearings

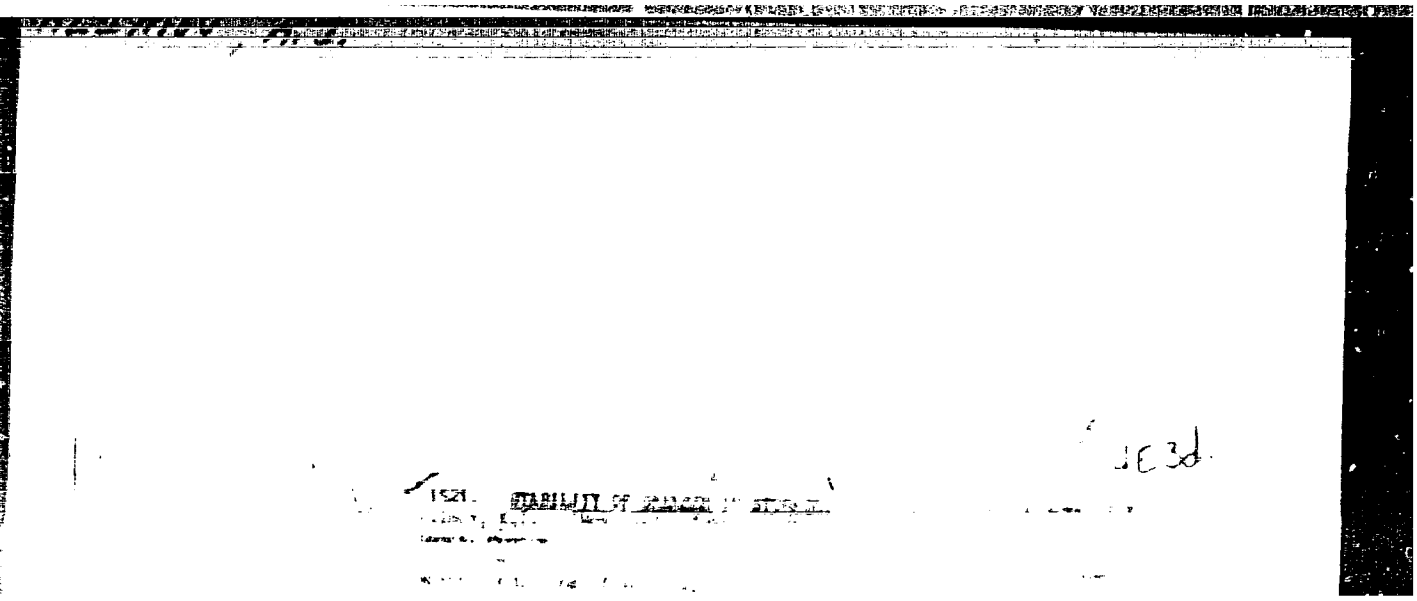
Original Publication: Novosti neft. tekhniki, Neftepererabotka, 1955, No 6, 37-44

Abstract: To investigate the throw-off of solid lubricants from separators of tapered roller-bearings, use was made of a thermostatic testing stand with four No 807813 bearings subjected to an axial load of 100 kg. By revolving the shaft of the bearings at different speed, 450-1,500 RPM (at 20 ± 1°), and at different temperature, within the range of 20-90° (at 600 RPM), a determination was made of the critical velocity or temperature, respectively, at which the lubricant begins to fly off the separator of the bearing. Duration of the test at a given

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1



APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.

The K-2 plastometer used for measuring compression strength of solid lubricants. Zav.lab. 21 no.4:491-492 '55 (MLRA 8:6) (Lubrication and lubricants)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.

Subject : USSR/Engineering AID P - 1780

Card 1/2 Pub. 78 - 18/26

Author : Klimov, K. I.

Title : Parameters for appraisal of the efficiency of consistent lubricants in friction joints

Periodical : Neft. khoz., v.33, no.3, 74-78, Mr 1955

Abstract : The author analyzes the criteria which should be applied to determine which lubricants are most suitable for friction joints in mechanical operations. For a comparative appraisal of mechanical properties of consistent lubricants, the following parameters are suggested for consideration: 1) the limit of load-carrying capacity of a lubricant at the highest temperature of operation, 2) the viscosity of a lubricant at a gradient of the rate of sheer and at a temperature similar to that prevailing at actual operation 3) for lubricants which

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.; VINOGRADOV, V.; SEMICHKIN, M.; FOMINA, A.; VILENKIN, A.

New oils for automobile transmission units. Avt.transp. 33 no.11: 17-19 N '55. (MLRA 9:3)

(Automobiles--Lubrication)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

The effect of chemical structure
viscosity relation of hydrocarbon [illegible]

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.; VILENKIN, A.V.

Losses of energy during the initial operation of transmission devices at low temperatures. Avt.i trakt.prom. no.7:24-26 Jl '57. (MIRA 10:11)

(Automobiles--Cold weather operation) (Automobiles--Transmission devices)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

Klimov, K.I.

AUTHORS: Klimov, K.I. and Vilenkin, A.V. 65-7-7/14

TITLE: The Influence of Physico-chemical Properties of Lubricating Oils on Energy Losses in Gear Transmission (Vliyaniye fiziko-khimicheskikh svoystv smazochnykh masel na poteri energii v shesterenchatoy peredache)

PERIODICAL: Khimiya i Tekhnologiya Topliva i Masel, 1957, No.7, pp. 39-42 (USSR).

ABSTRACT: An investigation of the dependence of energy losses in gear transmissions on the properties of lubricating oils was carried out using various industrial gears as well as models. The oils investigated and their properties are given in the table. Altogether 3 series of experiments were carried out; in the first series, the dependence of energy losses on oil temperature was established using special low r.p.m. gears, and on automobile gears [AZ-51; in the second and third series, the relationship between energy losses and oil viscosity at various gear speeds and various loads. The experimental results are shown in graphical forms, Figs. 1-4. It was established that increasing energy losses with decreasing oil temperatures for oils of different chemical composition and produced by different methods are determined only by increases in their viscosity.

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

The Influence of Physico-chemical Properties of Lubricating Oils on Energy Losses in Gear Transmission 65-7-7/14

The law of the dependence of energy losses on the viscosity of oil is general for all gear aggregates. It is independent of such factors as geometry of gears, the number of joined pairs of gears, the shape and dimensions of the gearbox, etc. On changes of the above factors, only the absolute value of the energy losses changes. The energy losses in a gear transmission are determined not by whipping of oil nor by its spraying on and swirling, but by the resistance in streams formed during the rotation of gears, i.e. by viscous resistances. In order to decrease the latter, oils of a minimum permissible viscosity (consistent with wear resistance requirements) and a flat temperature-viscosity curve should be used. There are 4 figures and 5 Russian references.

ASSOCIATION: NII GSM

AVAILABLE: Library of Congress

Card 2/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.[I.] VILENKIN, A.

Requirements for viscosity-temperature characteristics of transmission oils. Avt.transp. 35 no.9:13-14 S '57. (MIRA 10:10)
(Automobiles--Lubrication)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I., Doc Tech Sci—(diss) "Study in the field of automotive transmission (lubricants)." Mos, 1958. 38 pp with ills (Mos Order of Labor Red Banner Inst of Petroleum Chemistry and Gas Industry im I.M.Gubkin). List of author's works at end of text (16 titles). (KL,49-58,146)

-68-

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K., inzh.-polkovnik; MARKETOV, M., inzh.-podpolkovnik.

New transmission oil. Tankist no.1:43-44 Ja '58. (MIRA 11:3)
(Lubrication and lubricants)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.

AUTHORS: Klimov, K.I., Leont'yev, B. I.

65-58-4-12/12

TITLE: A New Method for Investigating the Mechanical Properties and Thixotropy of High Density Lubricants under Uniaxial Expansion (Novyy metod issledovaniya mekhanicheskikh svoystv i tiksotropii konsistentnykh smazok v usloviyakh odnoosnogo rastyazheniya)

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr 4, pp 66 - 72 (USSR)

ABSTRACT: Oils are subject to various types of deformation at the friction points. The periods of very intensive deformation of the same oil alternates with less intensive deformation, when the rate of mixing of separate particles is sharply decreased or completely absent. This lowers the consistency and viscosity of the oil. During the periods of less intensive mixing and the "rest period", the structure of the oils can change. The type of change is of practical importance during the laboratory evaluation of the efficiency of lubricants at friction points. The tensile strength can be measured on a plastometer K-2 (GOST 7143-54). A modified apparatus and method is based on determining the tensile strength (Fig.1). The change in the gradient velocity was determined by the

Card 1/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

change in the number of revolutions of the rotor, which was connected to a motor (controlled with the aid of an electron-ion regulator (ELIR-25)). This arrangement makes it possible to change the revolutions of the electron-motor without interruption, and to alter the gradient of the rate of displacement at the moment of breakdown of the lubricant from 0 to 8,400 seconds^{-1}. The temperature of the thermostatic liquid is kept constant within $\pm 2^{\circ}C$ in the jacket of the apparatus, and is controlled at the point of outflow of the lubricant from the apparatus. The time of breakdown of the structure of the oil is regulated by changing the velocity of the flow of the lubricant through the apparatus. Due to the high degree of homogenization during the period of breakdown of the lubricant in the apparatus, the latter is very homogeneous; this is proved by the constant weight of the separated drops (Table 1). On the basis of many experiments it was found that the magnitude of tensile strength does not exceed 5% for most lubricants. The photographs in Fig.2 show the shape, deformation, and separation of drops of lubricants at the moment of breakdown.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

65-58-4-12/12

A New Method for Investigating the Mechanical Properties and Thixotropy of High Density Lubricants Under Uniaxial Expansion

The effect of the magnitude of the diameter is determined by using tubes of differing diameter. Lubricants with a small rate of thixotropic reduction of structure were used. It was found that the time of breakdown of these lubricants hardly affected the tensile strength when tested in a rotor device (Fig.3). At slightly increased rates of supply and small diameters of the tubes, the drops could not separate. It was found that, when tested, the rate of supply of lubricants should be 2 - 20 g/minute, and the diameter of the tubes should be 3 - 20 mm. The tensile strength of some industrial lubricants at 20°C in the apparatus, when D = 1,570 seconds^{-1}, and at 20°C when the loading of a sample was 0.29 g/cm^2/second are given in Table 2. Glass tubes glued into a special sleeve with glue BF-2 were used; the tubes had a diameter of 3.8 mm. The described method and the apparatus can be used for investigating the thixotropic properties of lubricants of high density and other colloid systems. The period of time of thixotropic reduction can be varied within

Card 3/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

65-58-4-12/12

A New Method for Investigating the Mechanical Properties and Thixotropy of High Density Lubricants Under Uniaxial Expansion

wide limits, and also the lengths of the tube or the arrangement of the special sleeve. Curves for the thixotropic reduction of synthetic lubricating greases are given in Fig.4. This method can be applied under factory conditions, and is most important for controlling the properties of lubricants and lubricating greases during continuous processes of manufacture. There are 4 Figures, 2 Tables and 4 Russian References.

Card 4/4 1. Lubricants-Mechanical properties-Test methods 2. Lubricants-Mechanical properties-Test results 3. Lubricants-Thixotropy 4. Lubricants-Testing equipment

USCOMM-DC-55,052

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

SINITSYN, V.V.; KLIMOV, K.I.; ALEYEVA, Ye.V.

Solloidal stability of lithium lubricants and effect of dispersion media on this stability. Zhur. prikl. khim. 31 no.8:1202-1210 Ag '58. (MIRA 11:10)

(Lubrication and lubricants) (Colloids)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.; ZAHUDNIY, P.P.

Mechanical destruction of polyisobutylene solutions in mineral oils. Khim.i tekh.topl.i masel 4 no.2:37-43 F '59. (MIRA 12:2)

(Mineral oils) (Propene) (Depolymerization)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

15.6500

77932
SOV/65-60-3-5/19

AUTHORS: Klimov, K. I., Leont'yev, B. I.

TITLE: Thixotropic Properties of Greases

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, Nr 3, pp 17-21 (USSR)

ABSTRACT: The authors studied the apparent viscosity of solidol made of animal fat (GOST 1033-51), solidol synthetic (GOST 4366-50), konstalin from animal fat (GOST 1957-52), and lubricant tsiatim-201 (GOST 6267-52). The results of the experiments are shown in Fig. 2. Solid lines in Fig. 2 show changes of apparent viscosity as a result of mechanical treatment plotted against shear rate. Dotted lines show relation of apparent viscosity changes of greases deformed at certain shear rate in the process of thixotropic regaining of their structure. Time needed for grease to regain its structure is shown in the upper part of Fig. 2. Some greases needed as much as 720 hr to regain structure. There are 3

Card 1/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

Thixotropic Properties of Greases

77932
SOV/65-60-3-5/19

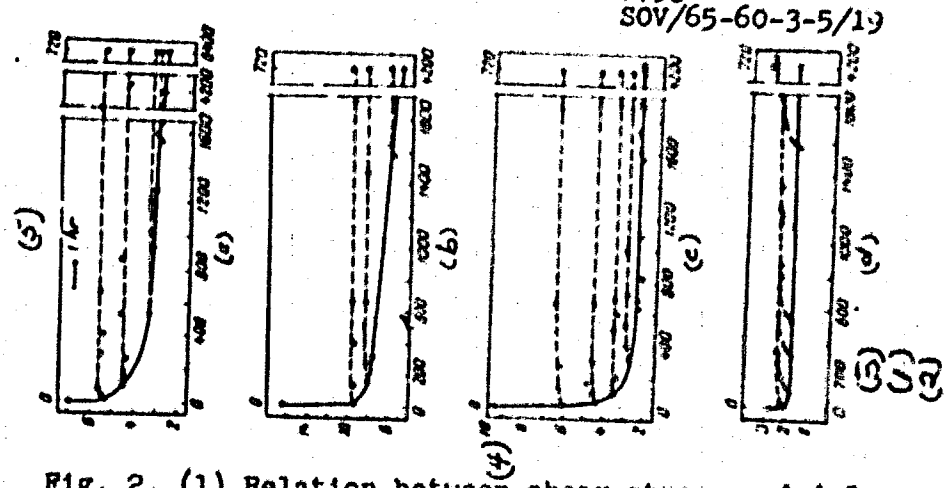


Fig. 2. (1) Relation between shear stress and deformation intensity of greases (2) a, solidol from animal fat; b, konstalin from animal fat; c, lubricant tsiatim-201; d, synthetic solidol (3) shear rate, sec^{-1} (4) shear stress, g/cm^2 (5) regaining time, hours.

Card 2/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

Thixotropic Properties of Greases

77932
SOV/65-3-5/19

figures; and 15 references, 7 Soviet, 8 U.S. The 5 most recent U.S. references are: Jackson, E. I., Boser, E. R., NLGI, Spok., 19, Nr 11, 8, 1956; Bailey, C. A., NLGI, Spok., 19, Nr 8, 12, 1955; Smith, J. D., NLGI, Spok., 19, Nr 8, 8, 1955; McGrogan, I. F., NLGI, Spok., 19, Nr 7, 22, 1955; Renshow, T. A., Ind. Eng. Chem., 47, Ne 4, 834, 1955.

Card 3/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

ROZHKOV, I.V.; KLIMOV, K.I.; KORNILOVA, Ye.N.; VILENKIN, A.V.

Performance characteristics of T-type fuel stabilized by the antioxidant FCb-16. Khim.i tekh.topl. i masel 5 no. 11:49-53 N '60. (MIRA 13:11)

(Jet planes--Fuel) (Petroleum--Refining)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

82677
S/069/60/022/004/001/003
B019/B054

15.6400

AUTHORS: Sinitsyn, V. V., Klimov, K. L., Alekseva, Ye. V.

TITLE: Colloidal Stability of the Disperse Systems of Lithium Soap - Oil

PERIODICAL: Kolloidnyy zhurnal, 1960, Vol. 22, No. 4, pp. 469-476

TEXT: The present report was delivered at the Fourth All-Union Conference of Colloid Chemistry at Tbilisi in May 1958. In the system lithium stearate - oil, the authors studied the influence of the pH, of the cooling rate, of the properties of the dispersing medium, etc. on the colloidal stability of the pseudo-gel-like disperse soap - oil systems. They investigated mixtures of spindle oil of the type 3, or oil of the type МК-8 (MK-8) with lithium stearate, and determined the pH on an ЛП-6 (LP-6) potentiometer, the colloidal stability (according to ГОСТ(GOST) 7142-54) on a КСА (KSA) apparatus, and the viscosity on an automatic capillary viscometer of the type АКВ-2 (AKV-2) and on a К-2 (K-2) plastometer. The results obtained led to the following conclusions: The pH of the system exerts a strong influence (Figs. 1, 2) manifesting itself by increasing stability

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

82677

Colloidal Stability of the Disperse Systems of Lithium Soap - Oil

S/069/60/022/004/001/003
B019/B054

with a decrease in acidity. On the other hand, with 0.04-0.06% of free NaOH (and more) a granular, gel-like texture is formed, and the colloidal stability in storing deteriorates. An increase in the cooling rate of the oil-soap melt improves stability and rheological properties. Mechanical homogenization reduces viscosity and stability (Table 1). Additions like lithium- or calcium naphthenate, acetate, or sulfonate, as well as glycerin, do not influence the stability of the system lithium stearate - MK-8 oil, whereas additions of alkaline reaction improve stability by increasing alkalinity. Electron microscopic examinations (Fig. 3) showed that a change in the pH influences the dimensions and shape of the soap crystallites considerably. The authors point to a relationship between structure and colloidal stability of the system investigated. There are 2 figures, 4 tables, and 26 references: 15 Soviet, 12 US, 1 British and 1 Indian.

ASSOCIATION: Nauchno-issledovatel'skiy institut goryuchesmazochnykh materialov Moskva (Scientific Research Institute of High-temperature Lubricants, Moscow) (should read "Fuels and Lubricants")

SUBMITTED: March 10, 1959

Card 2/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

85180

S/065/60/000/011/006/009
E194/E484

11.1210

AUTHORS: Rozhskov, I.V., Klimov, K.I., Kornilova, Ye.N. and Vilenkiy, A.V.

TITLE: The Service Performance of Fuel Type T Stabilized With Anti-Oxidant Ф4-16 (FCh-16)

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, No.11, pp.49-53

TEXT: Soviet jet fuels for civil aviation are grades T-1, TC-1 (TS-1) and T-2. Fuel T-2 is a wide gasoline-kerosene cut and fuels T-1 and TS-1 are kerosene cuts produced by straight distillation. Fuel type T is a jet-fuel containing gasoline fractions including thermally cracked components. The use of thermally cracked components considerably improves the supply position and the properties of the fuel are generally satisfactory, except that because of the presence of unsaturated hydrocarbons the fuel is much more subject to auto-oxidation than straight distillate fuels. Accordingly, the present work considers in particular the results of long-term storage of fuel containing thermally cracked components stabilized with anti-oxidant FCh-16. The wide-cut fuels are not such good lubricants as kerozene and may give rise to increased wear in fuel pumps. Accordingly,

Card 1/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

85180

S/065/60/000/011/006/009
E194/E484

The Service Performance of Fuel Type T Stabilized With Anti-Oxidant FCh-16

this property was also studied. Table 1 gives laboratory oxidation test results on fuels produced by different refineries. The oxidation tests were made at a temperature of 110°C for eight hours, oxidation being assessed by the actual resin content at a temperature of 185°C. The fuels were stabilized with 0.05% weight anti-oxidant FCh-16 which consists of phenols that are by-products of semi-coking of Cheremkhovsk coal. Previous work has shown that anti-oxidant FCh-16 is a more effective anti-oxidant for thermally cracked fuels than wood-rosin anti-oxidant, ionol and paraoxy-diphenylamine. Storage tests were made for 2.5 years under severe conditions with mean summer temperatures up to 30 to 35°C. In the fuel stabilized with anti-oxidant FCh-16 there was no increase in actual resins or in neutralization value. The data given in Table 2 show that the remaining physical-chemical properties of the fuel containing cracked component and stabilized with FCh-16 did not change during 2.5 years storage and remained within the standard limits. The anti-wear properties of fuels were investigated on a rig KB-1 (KV-1) illustrated schematically

Card 2/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

85180
S/065/60/000/011/006/009
E194/E484

The Service Performance of Fuel Type T Stabilized With Anti-Oxidant FCh-16

in Fig.2 in which a steel cylindrical roller 5 mm diameter rubs against a spiral of wire 2 mm diameter, wound on the cylindrical surface of a disc. The speed of loading and other conditions are given and the loads to cause scoring with various commercial fuels are plotted in Fig.3. It is shown that the fuels differ considerably in their anti-wear properties, of the straight distillate fuels grade T-1 is the best, T-2 is the worst and TS-1 is intermediate. Samples of fuel containing thermally cracked components and additive FCh-16 are better in anti-wear properties than fuel grade T-2 of the same viscosity and are not worse than fuel TS-1 although of somewhat lower viscosity. In order to explain the reason for this wear, tests were made with the components of the fuel to investigate the influence of adding FCh-16 and the results are plotted in Fig.4. It will be seen that product FCh-16 is able to improve the anti-wear properties of the fuel. It is concluded that a fuel containing 30% of cracking component and 0.05% anti-oxidant FCh-16 is of good oxidation stability and can be stored in the southern regions for not less

Card 3/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

85180
S/065/60/000/011/006/009
E194/E484

The Service Performance of Fuel Type T Stabilized With Anti-Oxidant FCh-16

than 2.5 years and, moreover, it is of satisfactory anti-wear properties. There are 4 figures, 2 tables and 6 references: 5 Soviet and 1 English.

4

Card 4/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

SINITSYN, V.V.; KLIMOV, K.I.; ALEYEVA, Ye.V.

Colloidal stability of the disperse systems lithium soap - oil. Koll. zhur. 22 no.4:469-476 Jl-Ag '60. (MIRA 13:9)

1. Nauchno-issledovatel'skiy institut goryuchesmazochnykh materialov, Moskva.

(Soap) (Oils and fats)

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

PHASE I BOOK EXPLOITATION SOV/5055

Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh. 3d, 1958.

Gidrodinamicheskaya teoriya smazki. Opory skol'zheniya. Smazka i smazochnyye materialy (Hydrodynamic Theory of Lubrication. Slip Bearings. Lubrication and Lubricant Materials) Moscow, Izd-vo AN SSSR, 422 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 3)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed. for the Section "Hydrodynamic Theory of Lubrication and Slip Bearings": Ye. M. Gut'yar, Professor, Doctor of Technical Sciences, and A. K. D'yachkov, Professor, Doctor of Technical Sciences; Resp. Ed. for the Section, "Lubrication and Lubricant Materials": G. V. Vinogradov, Professor, Doctor of Chemical Sciences; Ed. of Publishing House: K. Yu. Klo.anov; Tech. Ed.: G. N. Gan'kova.

PURPOSE: This collection of articles is intended for practicing engineers and research scientists.

COVERAGE: The collection, published by the Institut mashinovedeniya AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines) which was held April 9-15, 1958. Problems discussed were in

Hydrodynamic Theory (Cont.) SOV/5055

Kapustinskiy, M. V. On Unsteady Motions of the Journal in a Bearing ("Treniye i iznos v mashinakh" T. 14, Izd-vo AN SSSR, 1960) 164

IV. LUBRICATION AND LUBRICANT MATERIALS

Lubricant Materials and Wear

Vinogradov, G. V. Some New Methods of Producing and Investigating Lubricant Materials 165

Al'shits, I. Ya., Yu. N. Gapeyev, L. E. Sentyurikhina, and L. I. Bushkind. Experiment Using Disulfide of Molybdenum as a Lubricant Material 172

Bestyrad'ko, N. P., E. T. Pavlovskaya, and V. V. Arzhanova. Effect of the Composition and the Character of Gaseous Media on the Wear-Resistant Properties of Petroleum Lubricating Oils 177

Vinogr[illegible], G. V. Contact Effect in Wear as a Factor in the Oxidation of the Oil in Engines 187

Vinogradov, G. V., V. V. Arzhanova, E. T. Pavlovskaya, and N. D. Bestyrad'ko. Wear-Resistant and Antifriction Properties of Salt Fusions 191

Vinogradov, V. A., and V. G. Lebedev. Abrasive Wear of Roller Bearings in the Presence of a Lubricant Material 198

Klimov, S. I., and G. I. Kizhkin. Critical Temperature of an Oil Film in Sliding Contact of Steel Surfaces, and the Bearing Capacity of the Oil 201

Lazovskaya, O. V. Methods for Determining the Critical Temperature of an Oil Film in the Case of Friction of Steel Against Antifriction Alloys 212

Sherman, G. Ya. Wear-Resistant Reactions of Sulfur-organic Compounds as Additives to Lubricant Oils 218

Klimov, S. I., and E. E. Zaruzdny. Mechanical Destruction of Solutions of Polymers in a Flow (Published in 1959 under the title: "Mechanical Destruction of Solutions of Polyisobutylene in Mineral Oils") ("Khimiya i tekhnologiya topliv i masel", No. 8, 1959) 228

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

29444

15.6600

11.9000

S/081/61/000/017/144/166
B117/B138

AUTHORS: Klimov, K. I., Kichkin, G. I.

TITLE: Critical temperature of the oil film in the sliding contact of steel surfaces, and dispersive power of the oil

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1961, 471-472, abstract 17M218 (Tr. 3-y Vses. konferentsii po treniyu i iznosu v mashinakh, M., AN SSSR, v. 3, 1960, 201-212)

TEXT: On the basis of data obtained from investigations of mineral oils of different viscosities on a 4-ball friction machine (60 sec, 1200 rpm), the authors set up an equation: $\log \log(v + 0.8) = KP_k + C$, where v = viscosity of the oil at initial test temperature, P_k = critical load (seizing load), K and C = constants for a series of oils of the same group in chemical composition. For $P_k = 0$, $v(v_k)$ is found from an equation suitable to the oil in question. Then the critical temperature (CT) of the oil is determined from the temperature-viscosity dependence curve; i.

Card 1/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

S/081/62/000/006/096/117
B162/B101

11.9700

AUTHORS: Klimov, K. I., Vilenkin, A. V., Kichkin, G. I.

TITLE: New method of evaluating the effectiveness of anti-seizing additives to oils and fuels

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 546, abstract 6M297 (Sb. "Prisadki k maslam i toplivam", M., Gostoptekhizdat, 1961, 273-278)

TEXT: To evaluate the anti-seizing properties of lubricating materials, a new design of friction machine is developed, simulating the operating conditions of a friction couple in real mechanisms in respect of slip speed (0.5-30 m/sec), temperature (up to 200°C), and periodicity of contact in a wide range of variations (a diagram of the friction machine КВ-1 (KV-1) is given). A method is proposed for a comparative evaluation of the anti-seizing properties of lubricating materials and other petroleum products (e.g., jet fuels). The anti-seizing properties of some petroleum products are investigated in the pure state and with additives. It is shown that the device and method of evaluation proposed are characterised by high sensitivity. [Abstracter's note: Complete translation.]

Card 1/1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

KLIMOV, K.I.; MIKHEYEV, V.A.

Five-ball friction machine for testing lubricants. Neftepер. i neftekhim. no. 3:31-34 '64. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

[illegible]

[illegible] Bettekhimiya, [illegible]

[illegible] lubricant testing, [illegible]

[illegible] temperature and [illegible]

[illegible]

[illegible] may be made by substituting [illegible] differing materials, and

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

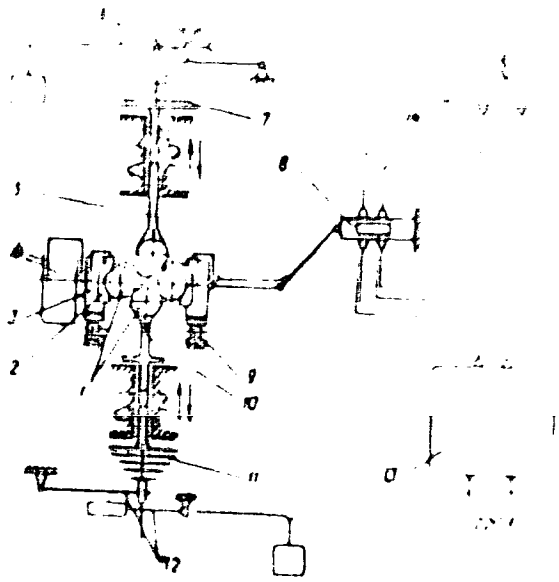
"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

temperature of the system. Orig. art. has 2 figures.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

ACCESSION NR: AP4049881



APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 12451-65

ACCESSION NR: AP4049883 ENCLOSURE: 02

Figure Diagram of the five-ball friction machine [illegible] assembly of five balls; [illegible] external ring of the bearing, [illegible] housing, [illegible] upper ball, [illegible] ball assembly, [illegible] upper [illegible] indicator, [illegible] bearing, 10. lower ball [illegible] lower [illegible] feed pa[illegible]

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

ACCESSION NR: AP4023499 S/0069/64/026/002/0200/0206

AUTHORS: Klimov, K.I.; Leont'yev, B.I.; Sinitsy*n, V.V.

TITLE: The effect of the intensity of strain on the bulk-mechanical properties of lubricating greases

SOURCE: Kolloidny*y shurnal, v. 26, no. 2, 1964, 200-206

TOPIC TAGS: lubricating grease, lubricating grease property, sodium grease, calcium grease, lithium grease, grease breakdown, thixotropic breakdown, rotatory viscosimeter, capillary viscosimeter, strength temperature characteristic

ABSTRACT: The thixotropic breakdown and recovery of lubricating greases was investigated by breaking them down in the annular gap of a rotatory instrument. The breakdown time was controlled by changing the axial rate of flow of the grease between the stationary and the rotating cylinders of the instrument. Viscometric measurements in capillary (AKV-2) and rotatory (PVR-1) instruments were compared

Card 1/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

ACCESSION NR: AP4023499

(Figs. 1 and 2 of the Enclosure); in the rotatory viscosimeter the breakdown of the greases must be considered when comparing results. Viscosity, yield value, and tensile strength of the greases was determined before and after breakdown of sodium and calcium greases, and lubricant TsIATIM-201 (lithium). Increase in the breakdown intensity lowers the viscosity and yield value of the greases down to a given level. Some greases made of soaps of synthetic acids showed an increase in the yield values with increasing strain. Intensity of mechanical breakdown is only slightly indicative of the strength-temperature and the viscosity-rate properties of the lubricating greases. Orig. art. has: 6 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 10Nov62 DATE ACQ: 15Apr64 ENCL: 02

SUB CODE: FP NO REF SOV: 006 OTHER: 000

ATD PRESS: 3044

Card 2/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

ACCESSION NR: AP4023499 ENCLOSURE: 01

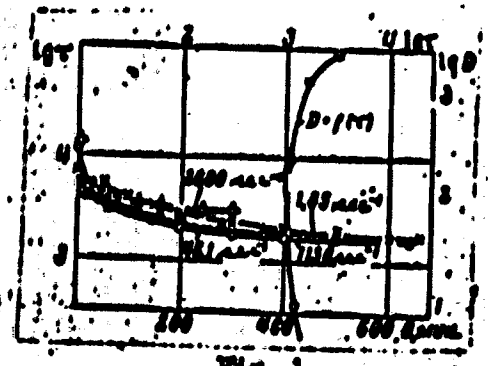


Fig. 1

Viscosity characteristics of TsIATIM-201 grease at 20C, obtained on rotary viscosimeter

Card 3/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

ACCESSION NR: AP4023499 ENCLOSURE: 02

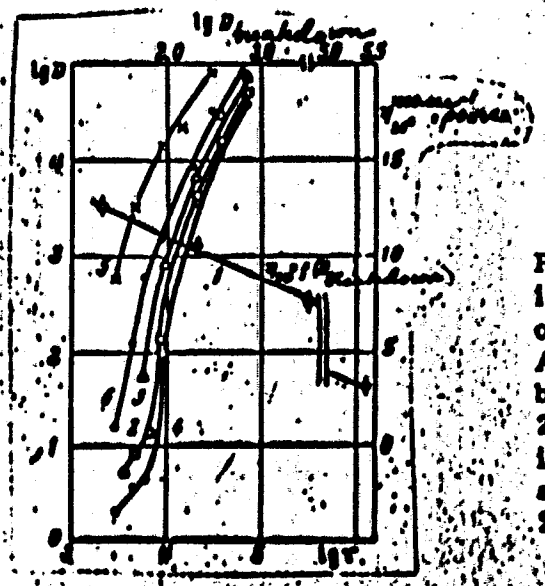


Fig. 2
Relationship of viscosity characteristics of TsIATIM-201 grease, obtained on capillary viscosimeter AKV-2 at 20C, to the intensity of its breakdown: 4--prior to breakdown; 2, 3, 6--after breakdown at D, equaling 21 sec^{-1}, 210 sec^{-1} and 3150 sec^{-1}; 5--homogenizing at D = 252,000 sec^{-1}; 1--η_{eff}

Card 4/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

[illegible] Po-4/Pr-[illegible]
AP5014951 [illegible]/006/0050/0053
[illegible]21.5

[illegible] Kimov, K. I.; Mikheyev, V. A.

TITLE: Working capacity of oils during rolling friction in different gaseous media

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 6, 1965, 50-53

TOPIC TAGS: lubricating oil, engine, organosilicon compound, rolling effect, friction, friction bearing, oxygen/ MS 20 oil, SM 6 oil, PMS 100 oil, PMS 20 oil, FM 1322 300 oil, OS oil, MT 4 testing device

ABSTRACT: The effect of vacuum and neutral gas on the performance of different organosilicic and hydrocarbon oils (PMS-100, FM 1322.300; PMS-20, SM-6) in the rolling friction nodes was studied in the MT-4 testing device (shown in Figures 1 and 2 on the Enclosure). Balls made of Si-Mo steel and covered with the investigated oil are placed in a ShKh-15 steel cup inside the chamber of the four-ball friction device filled with air or nitrogen or evacuated. The friction zone is heated and loaded before the shaft is put into motion. The rolling friction moment is registered continuously. Time period τ (from the shaft rotation start

Card 1/7

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 55206-65
ACCESSION NR: AP5014951

to the sudden increase in the friction moment) determines the normal work period of the friction node. The relation of τ_{min} to the absolute temperature (T) and to stress at the zone of ball contact with the vertical cup walls (σ_{cp}) is described by the equation $\lg \tau = A + \frac{B}{T\sigma_{cp}}$,

where A and B are constants used in the wearing capacity evaluation of oils in the rolling friction zone. Investigation results are presented in figures 3 and 4 on the Enclosure. For comparison, the upper abscissa of all the graphs shows a temperature series for the particular case: $\sigma_{cp} = 10^4$ kg/cm². The organosilicic lubricants proved inferior to the hydrocarbon oils. The working capacity of the hydrocarbon oils and the ethylpolysiloxene fluids increased under nitrogen, while [illegible] methyl- and phenylpolysiloxene and dioctylsebacinate remained unchanged. [illegible] the period of normal working performance decreased with the increase [illegible] volatility. This effect was corrected by increasing the gas-space volume. [illegible] range of atmospheric conditions for vacuum (with unlimited gas-space), [illegible] capacity of oils began to depend on the degree of the air oxidation [illegible] atmospheric oxygen and on the oil volatility (the rate of oil expenditure was [illegible] due to oxidation and increased as a result of evaporation). Orig. art. has: 1 table and 5 figures.

Card 2/7

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 55244-65
ACCESSION NR: AP5014951

ASSOCIATION: VNII NP

SUBMITTED: 00 ENCL: 04 SUB CODE: FP

NO REF SOV: 004 OTHER: 001

Card 3/7

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 55244-65
ACCESSION NR: AP5014951

ENCLOSURE: 01

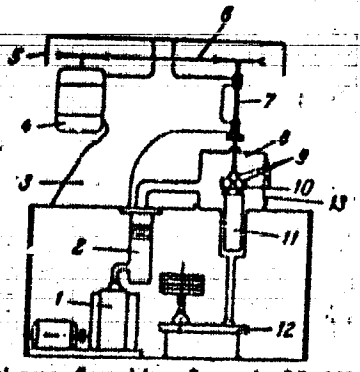


Fig. 1. Scheme for the four-ball MT-4 apparatus.

1- forevacuum pump; 2- diffusion pump; 3- pedestal; 4- electromotor; 5- protective frame; 6- transmission belt; 7- shaft; 8- chamber; 9- four-ball pyramid; 10- cup; 11- hydraulic loading device; 12- sample piston-manometer; 13- lid of the chamber

Card 4/7

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 55244-65
ACCESSION NR: AP5014951

ENCLOSURE: 02

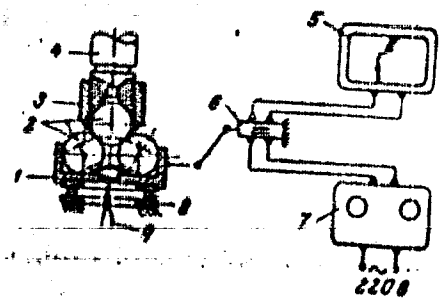


Fig. 2. Scheme for the friction node of the MT-4 device.

1- working cup; 2- four-ball pyramid; 3- clamping nut; 4- shaft; 5- EPP-09; 6- tensometric dynamometer; 7- rectifier; 8- thrust bearing; 9- thermocouple

Card 5/7

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 55244-65

ACCESSION NR: AP5014951

ENCLOSURE: 03

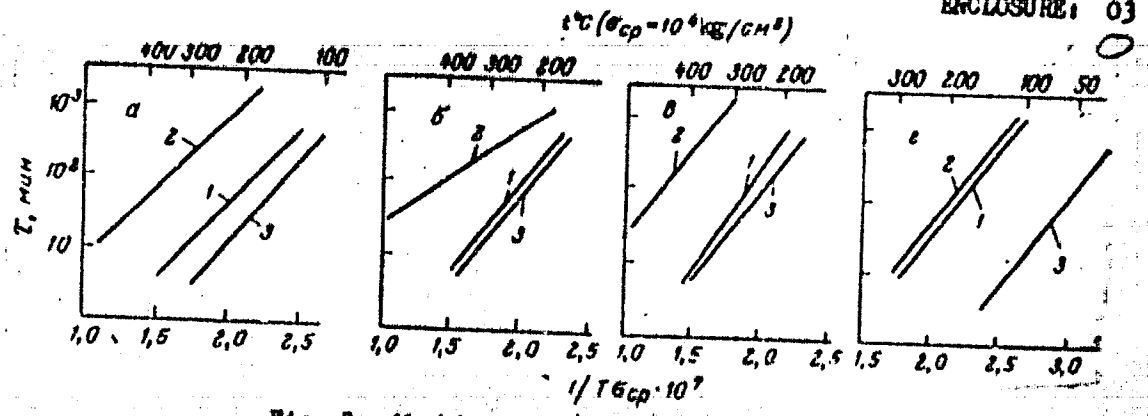


Fig. 3. Working capacity of oils in various gaseous media.

a- naphthenic hydrocarbons; б- MS-20; b- aromatic hydrocarbons; г- O.S.; 1- air; 2- nitrogen; 3- vacuum

Card 6/7

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 55244-65
ACCESSION NR: AP5014951

ENCLOSURE: 04

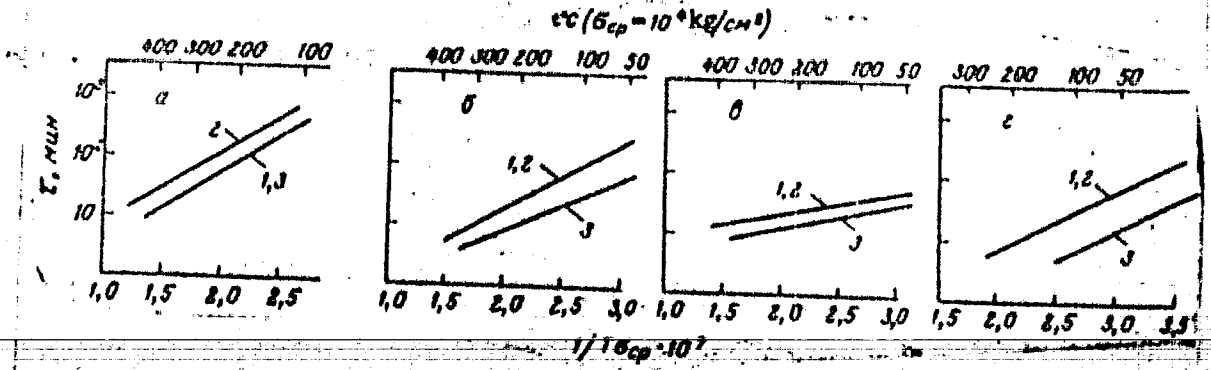


Fig. 4. Working capacity of oils in various gaseous media.

a- SM-6; б- PM 1322/300; b- PMS-100; г- PMS-20; 1- air; 2- nitrogen; 3- vacuum

Card 7/7 MG

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 52572-65 EWT(m)/EWP(w)/EPF(c)/EWA(d)/EPR/T/EWP(t)/EWP(b) Pc-4/Pr-4

UR/0065/65/000/004/0052/0055

41

ACCESSION NR: AP5009901

38

B

AUTHORS: Klimov, K. I.; Mikheyev, V. A.

TITLE: Effects of temperature and loading on the performance of oils in the rolling friction zone

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 4, 1965, 52-55

TOPIC TAGS: lubricant, lubricating oil, synthetic lubricant, testing device, test method, friction, friction bearing, rolling effect/ MS 20 mineral oil

ABSTRACT: The performance of organosilicon lubricants in the rolling friction zone of a five-ball experimental friction machine (shown schematically in Fig. 1 of the K. [illegible]) was studied in a broad range of temperatures and loads. This machine was described by K. I. Klimov and V. A. Mikheyev (Pyatisharikovaya mashina trenia dlya issledovaniya smazochnykh masel. Neftepererabotka i neftekhimiya, No. 3, 1964, 31). The rolling friction zone is formed of a 5-ball pyramid and a spherical-bearing ring fixed to a bowl. The upper and lower balls are connected rigidly to the shafts 5 and 10 which rotate in the same direction at 3200 revolutions/min. Load is exerted by the upper dynamometer 6. The bowl 3 remains motionless, and the middle balls roll along the internal surface of the bearing

Card 1/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 52572-65

3

ACCESSION NR: AP5009901

ring 2, while the upper and lower ones roll on the adjacent balls. In the current experiments the friction zone was heated to the required temperature, the lubricant was introduced, and the shafts were put into motion. The conditional term "oil performance time" indicates a period from the start to the beginning of dry friction. These periods were determined for the five synthetic lubricants and were compared to those of the MS-20 and other mineral oils. The results obtained are tabulated. The behavior of MS-20 and of the organosilicon fluids under different temperatures and loads is shown graphically. Empirical equations describing the relation of the oil performance time to stress and temperature are presented. The performance time of the mineral oils in the temperature range 100-400C increased with the transition from distillate to residual oils; the time of the residual MS-20 oil at 200C was 30 times shorter than that of the distillate transformer oil. This difference decreased with the lowering of temperature. Although the organosilicon lubricants were less volatile than the mineral oils, their performance times at 400C and mean stress of 12350 kg/cm^2 (at the contact of the middle balls with the bearing ring) were considerably lower than those of MS-20, and the difference increased with the lowering of temperature. Orig. art. has: 1 table and 5 figures.

ASSOCIATION: none

Card 2/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 52572-65

0

ACCESSION NR: AP5009901

SUBMITTED: 00 ENCL: 01 SUB CODE: PP

NO REF SOV: 001 OTHER: 000

Card 3/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 52572-65

ACCESSION NR: AP5009901

ENCLOSURE: 01

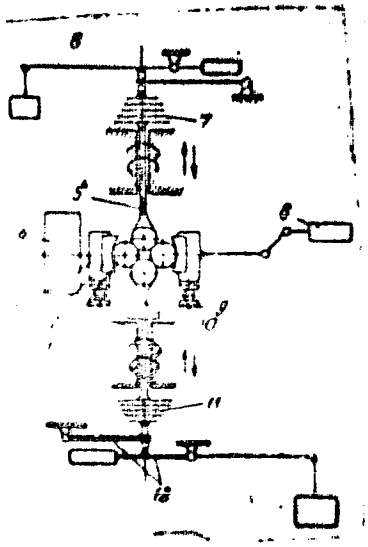


Fig. 1. Scheme for a five-ball friction machine.

1- five-ball pyramid; 2- external bearing ring; 3- bowl; 4- electrical heater; 5- upper shaft; 6- upper loading device; 7- upper set of pulleys; 8- sensing element of strain gauge; 9- thrust bearing; 10- lower shaft; 11- lower set of pulleys; 12- lower loading device

Card 4/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 00316-66 EWT(d)/EWT(m)/EWP(w)/EPF(c)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(z)/EWP(b)/EWP(1)/ETC(m) BW/JD/WW/WB/DJ/GS

ACCESSION NR: AT5020439 UR/0000/65/000/000/0088/0092

AUTHORS: Klimov, K. I.; Mikheyev, V. A.

TITLE: Effects of gaseous environment on lubricant effectiveness under conditions of bearing friction

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam. Teoriya smazochnogo deystviya i novyye materialy (Theory of lubricating action and new materials). Moscow, Izd-vo Nauka, 1965, 88-92

TOPIC TAGS: lubricant, lubricant life, lubricant property / N 15 lubricant, MS 20 lubricant, MAS 35 lubricant, PM 1322/300 lubricant, PMS 100 lubricant, PMS 20 lubricant, MT 4 friction machine

ABSTRACT: The effects of load, temperature, and gaseous environment on the effectiveness of various lubricants were investigated on friction machine MT-4 (G. V. Vinogradov i dr. Pribory dlya issledovaniya fiziko-khimicheskikh svoystv i struktury metallov i materialov. Vypusk No. P-60-45/6. M., TsNIIRI, 1960). Lubricated balls of Cr-Mo steel (12.7 mm diameter) were loaded with 37.5-300 kg (top ball) and tested at 2560 rpm until a sudden rise in friction torque indicated lubricant failure (± 30% reproducible). Tests were conducted in air, under

Card 1/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 00316-66

ACCESSION NR: AT5020435

3

vacuum (10^{-4} tor) and under nitrogen (1 liter/minute). It was found that the time-to-failure t as a function of absolute temperature T and stress σ could be expressed as $\log t = A + B/T\sigma$ (A, B = constants). Curves of time-to-failure at different operating temperatures (100-400C) were obtained for 8 lubricants in air, vacuum, and nitrogen (see Fig. 1 on the Enclosure). It was found that for hydrocarbon lubricants (MS-20, MAS-35, N-15) and ethylpolysiloxane fluid (lubricant 6) time-to-failure increased considerably in Ni, indicating the importance of oxidation processes. For lubricants Fm 1322/300, PMS-100, PMS-20, and dioctalsebacynate, the effect of Ni atmosphere was negligible. In vacuum the decrease of O_2 concentration tends to lengthen operating life, while the increased lubricant vaporization decreases it. The net effect was always a decrease of time-to-failure in a vacuum as compared with air and N_2 curves. Orig. art. has: 2 figures.

ASSOCIATION: Nauchnyy sovet po treniyu i smazkam, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR)

SUBMITTED: 22May65 ENCL: 01 SUB CODE: FP

NO REF SOV: 003 OTHER: 002

Card 2/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 00316-66

ACCESSION NR: AT5020435

ENCLOSURE: 01

Fig. 1.
Sample curves for N-15 lubricant;
1- air, 2- N_2; 3- vacuum

Card 3/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 00318-66 EWT(m)/EWP(w)/EPF(c)/EWP(j)/T/EWP(t)/EWP(b) BW/JD/DJ/GS/RM

ACCESSION NR: AT5020437 UR/0000/65/000/000/0131/0134

AUTHORS: Sentyurikhina, L. N.; Rubtsova, Z. S.; Klimov, K. I.

TITLE: Investigation of life and antifriction properties of solid lubricants

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam. Teoriya smazochnogo deystviya i novyye materialy (Theory of lubricating action and new materials). Moscow, Izd-vo Nauka, 1965, 131-134

TOPIC TAGS: solid lubricant, lubricant property, molybdenum disulfide / VNII NP 212 lubricant, 213 lubricant, 229 lubricant, 230 solid lubricant

ABSTRACT: Four molybdenum-disulfide based solid lubricants developed by VNIINP, differing only by the type of film-producing substance used, were investigated for their life and antifriction properties. The destruction of the film producer was measured on apparatus PIM-2 as described by V. M. Martynov (Neftepererabotka i neftekhimiya. Sbornik, vyp. 8, M., Goskhimizdat, 1963) while the frictional stability was measured on apparatus ITK developed by Klimov (no reference given). The friction couple consists of a 5-mm diameter by 50-mm long roller and a nichrome strip (0.1 mm thick by 4.5 mm wide) which is loaded with 300 gm (included angle of 120°) against the roller rotating at 800 rpm; the strip moves at 4 mm/min

Card 1/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 00318-66

ACCESSION NR: AT5020437

10

with respect to the roller, giving a sliding speed of 0.21 m/sec; the coefficient of friction μ is determined by torque measurement. After sand blasting and parkerizing, the steel surface was coated 20 micron thick with VNII NP-212 (K-41 102 - ureaformaldehyde resin film producer), -213 (K-55 silico-organic resin), -229 (sodium silicate), or -230 (EP-096 epoxy resin) lubricants. Weight loss and friction characteristics were determined as a function of temperature (150-400C). It was found that the weight loss (based on 30-minute test) of the organic binders EP-096 and K-41 102 was higher (up to 20% at 200-350C) than that for nonorganic K-55 and Na_2SiO_2 (5-6% at 300-350C). The life and friction coefficient curves (see Figs. 1 and 2 on the Enclosure) were found to have maxima and minima respectively at ≈ 100C. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Nauchnyy sovet po treniyu i smazkam, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR)

44,55

SUBMITTED: 22May65 ENCL: 02 SUB CODE: FP

NO REF SOV: 006 OTHER: 007

Card 2/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 00318-66

ACCESSION NR: AT5020437

ENCLOSURE: 01

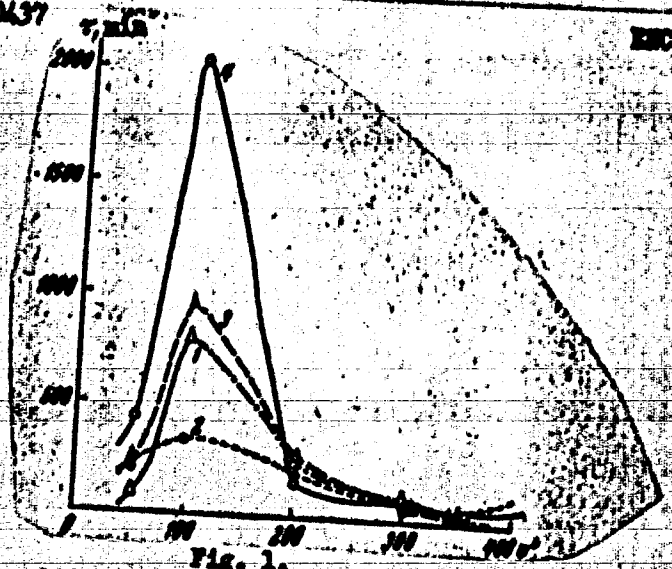


Fig. 1.
Life of solid lubricants:
1- VNII NP-213; 2- 229; 3- 230; 4- 212

Card 3/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 00318-66

ACCESSION NR: AT5020437

ENCLOSURE: 02

Fig. 2.
Friction coefficients:
(same as Fig. 1)

Card 4/4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 26497-66 EWT(m)/T DJ

ACC NR: AP6009483

SOURCE CODE: UR/0020/66/167/001/0045/0048

AUTHOR: Klimov, K. I.

ORG: All-Union Scientific Research Institute for Oil Refining (Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke neftI)

37
35
B

TITLE: Antiseizure properties of oils as a function of their decomposition rate in the friction zone

SOURCE: AN SSSR. Doklady, v. 167, no. 1, 1966, 45-48

TOPIC TAGS: friction welding, lubricating oil, antiseize additive, metal friction, lubrication

ABSTRACT: A new fundamental approach to seizure prevention through the use of EP lubricating oils and through the proper design of friction units has been formulated. The principle involved is that the main factor governing an oil's ability to prevent seizure of rubbing surfaces is the rate of decomposition (V) (oxidation, polymerization, and thermal decomposition) of the original oil into products incapable of providing liquid lubrication. Seizure occurs when this decomposition rate is equal to or greater than the oil's rate of entry into the friction zone.

Card 1/5

UDC: 621.29.001.4

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 26597-66

ACC NR: AP6009483

The relation between V and temperature (T) in this zone is given by the Arrhenius equation

$$\log V = A - B/T \qquad (1)$$

where A is a constant, $B = E/2.3R$ (E is the activation energy and R, the universal gas constant), and T is the absolute temperature. The constants of equation (1) are considered suitable as criteria describing the anti-seizure properties of oils. It was further shown that V is a function solely of sliding velocity (v) and length (l) of the rubbing element and is therefore readily determined experimentally:

$$V = v/l \qquad (2)$$

V and T were calculated for a number of oils from data from four-ball apparatus one-minute tests (see Figures 1 and 2) using ShKh-9 steel balls 9.52, 12.7, and 19 mm in diameter. Fresh oil was used for each test. The value of l equal to the diameter of the elastic contact area between balls at load P_k was calculated by Hertz's formulas and the temperature rise at the contact area, by Blok's equation. Figures 1 and 2 show that the data fitted equation (1) well. It was found that, for oils without additives, the activation energy varied from 4.6 kcal/mol (MS-20 oil)

Card 2/5

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

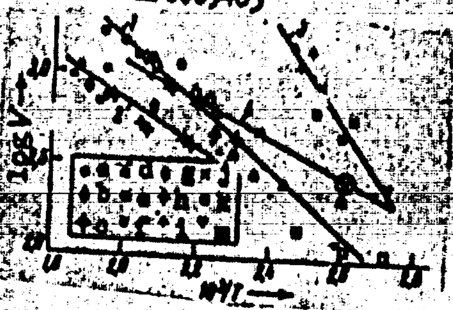


Fig. 1. Mean oil decomposition rate vs friction zone temperature (four-ball apparatus tests: ball diameter, 9.52 mm)

1 - MK-22 mineral oil; a - sliding velocity, 35 cm/sec, temperature at onset of test, 160, 130, 100, 75, and 45°C; b - 26 cm/sec, 160, 130, 100, 45, and 20°C; c - 17.4 cm/sec, 160, 130, 100, 45, and 20°C; d - 8.68 cm/sec, 130, 100, 75, and 20°C; e - 4.34 cm/sec, 100, 75, and 45°C; 2 - same oil with antiseizure additive: f - 35 cm/sec, 130, 100, 75, and 20°C; g - 26 cm/sec, 130, 100, 45, and 20°C; h - 17.4 cm/sec, 130, 100, 45, and 20°C; 3 - AU spindle oil: i - 35 cm/sec, 45, 20, and -20°C; j - 26 cm/sec, 20° C; k - 17.4 cm/sec, 45, 20, and -20°C; m - 8.68 cm/sec, 45 and 20°C; 4 - same oil with antiseizure additive; temperature at onset of test, 20°C; sliding velocities same as for curve 3.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 26597-66
ACC NR: AP6009483

to 13.5 kcal/mol (AU spindle oil). Such relatively low values of the activation energy points to a catalytic effect of the metal on chemical changes in the friction zone. Addition to the oil of an antiseizure (EP) additive [unidentified] (containing 20% sulfur and 27% chlorine) led to a sharp change both in the oil decomposition rate and the activation energy (Fig. 1). It is noted that constants E and A in equation (1) can change with changes in friction conditions (bulk temperature of oil, chemical composition of metal, gaseous medium).

It is claimed that the way is now paved for the design of friction units specifically with a view to seizure prevention, whereas heretofore reliable parameters (i.e., parameters independent of test equipment characteristics) for such design were lacking. The results of the study also point to the necessity of reexamining present ideas on the role and mechanism of action of antiseizure (EP) additives based on the idea that their principal function is to inhibit oil decomposition processes in the friction zone. Of great importance is the determination of the role of additives as agents inhibiting the catalytic activity of the metal. The effect of the gaseous medium on the seizure process now also demands reexamination.

Card 4/5

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 26597-66

ACC NR: AP6009483

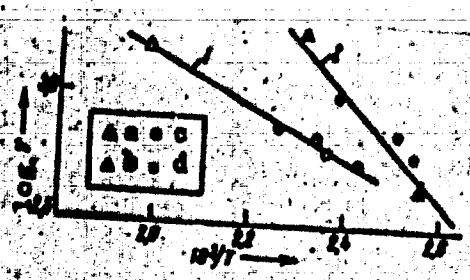


Fig. 2. Mean oil decomposition rate vs friction zone temperature

1 - MS-20 mineral oil: a - ball diameter, 12.7 mm, 57.6 cm/sec, 20°C; b - 19 mm, 25.9 cm/sec, 100, 75, 50, and 20°C; 2 - SU machine oil: c - 12.7 mm, 20°C, 17.3 and 57.6 cm/sec, d - 19 mm, 25.9 cm/sec, 100, 50, and 20°C.

Orig. art. has: 3 figures and 1 formula. The paper was presented by Academician A. Yu. Ishlinskiy 4 Jun3 1965. [ATD PRESS: 4223-F]

SUB CODE: 11, 13, 20 / SUBM DATE: 27May65 / ORIG REF: 003 / OTH REF: 002

Card 5/5 BLG

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 02962-67 EWT(m)/EWP(i)/T IJP(c) RM

ACC NR: AP6032844 (A,N) SOURCE CODE: UR/0065/66/000/010/0046/0051

AUTHOR: Sentyurikhina, L. N.; Klimov, K. I.; Rubtsova, Z. S.; Rudakova, L. F.

ORG: VNII NP

61
55
B

TITLE: Effect of temperature on the service life of solid film lubricants

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 10, 1966, 46-51

TOPIC TAGS: solid film lubricant, thermal oxidative stability, service life, friction coefficient, film forming material, additive

ABSTRACT: A study has been made of the effect of temperature on the thermal-oxidative stability and service life [in air] of solid film lubricants based on certain organic and inorganic film-forming materials (see Table 1) which contain MoS_2 or graphite additives [percentage unspecified]. The thermal-oxidative stability of the materials was estimated from weight loss on the PIM-2 apparatus described previously (Martynov, V. M. Neftepererabotka i neftekhimiya, no. 8, 1963). Unlike the urea-formaldehyde film-forming material, the organosilicon and epoxy materials and, in particular, Na_2SiO_2, were shown to exhibit high thermal-oxidative stability at 300—350C. This stability was considerably improved by the addition of MoS_2. The service life (τ) and friction coefficient (μ) of the films were determined on the ITK apparatus described previously (Sentyurina, L. N. et al. Teoriya smazochnogo deystviya. Izd. Nauka 1965). The μ was low for films based on organofluorine or organic

Card 1/3 UDC: 621.893

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"

"APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1

L 02962-67

ACC NR: AP6032844

Film-forming material		Service life (in min) at				
Type*	Brand	[illegible] °C	[illegible] °C	[illegible] °C	[illegible] °C	[illegible] °C
Inorganic organosilicon	KTP-9	75	144	122	28	3
	K-66	90	230	130	—	—
	K008+ 100	300	270	184	—	—
	K008+ 5	136	560	300	370	—
	K008+ BMK5	113	147	200	32	—
Organofluorine	3-3N	122	144	48	10	10
	32K	163	236	28	15	12
	FBF-74D	120	115	66	25	14
Polyester	KT	58	160	193	45	33
	[illegible]	140	174	163	—	—
	[illegible]	164	136	130	—	—
	FL-80	408	1300	533	56	40
Penol-formaldehyde	[illegible]	136	912	787	140	80
	[illegible]	310	984	443	55	15
	[illegible]	180	745	422	60	45
	FKF-4	485	1240	662	175	45
	FRAM	174	478	198	45	17
	F-10	312	1170	477	62	15
Polyraryl ester	IF	202	300	248	110	36
Epoxy	ED-6	275	1300	820	325	35
	E-41	106	330	55	48	22
	E-33	10	156	72	30	16
	ED 20	70	110	256	84	22
	E-10	186	147	166	—	—
	E-49	174	306	127	106	36
Ethylcellulose - Urea formaldehyde	NI 100	56	60	30	36	15
	K4-11-02	480	>2030	700	—	80

*[Composition not further specified]

Table 1.

Card 2/3

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120014-1"