"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V.M., kandidat tekhnicheskikh nauk.

Effect of sonic and ultrasonic elastic vibrations on the mechanical properties of fabric. Tekst.prom.16 no.4:45-46 Ap '56. (Textile fabrics) (MLRA 9:7)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V.M., kandd. tekhn. nauk; MIKHAYLOV, A.N., doktor tekhn. nauk, prof.

Intensifying the tanning by ultrasonic dispersion of solutions. Leg. prom. 18 no.3:13-14 Mr '58. (MIRA 11:4)
(Tanning) (Ultrasonic waves--Industrial applications)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V.M., kand.tekhn.nauk; DENISOVA, A.A., kand.tekhn.nauk; PANFILOVA, K.L., inzh.

Using ultrasonics for obtaining fatty emulsions. Kozh.-obuv. prom. no.6:22-27 Je '59. (MIRA 12:9)
(Ultrasonic waves--Industrial applications)
(Tanning materials)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Viktor Mironovich, kand.tekhn.nauk; ISLANKINA, T.F., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[Ultrasound; from the "Voskresnye chteniia" of the Politechnical Museum in Moscow] Ul'trazvuk; po materialam "Voskresnykh chtenii" Politekhnicheskogo muzeia v g.Moskve. Moskva, Izd-vo "Znanie," 1960. 47 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.4, Nauka i tekhnika, no.19).
(Ultrasonics) (MIRA 13:7)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V.M., and KONDAKOVA, L.I.

"The fundamental laws of ultrasonic dispersion in practice and the necessary equipment for it."

report presented at the All-Union Scientific-Engineering Conference on the Application of Ultrasonics in Industry, Moscow, 22-26 November 1960.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V.M.

"Problems in the Industrial Utilization of Ultrasonics in Chemical Engineering Process."

report presented at the All-Union Scientific-Engineering Conference on the Application of Ultrasonics in Industry, Moscow, 22-26 November 1960.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V.M.

PHASE I BOOK EXPLOITATION SOV/5884

Gershgal, David Abramovich, and Viktor Mironovich Fridman

Ul'trazvukovaya apparatura (Ultrasonic Instrumentation) Moscow, Gosenergoizdat, 1961. 246 p. 12,000 copies printed.

Eds.: G. K. Novik and S. N. Sinitsin; Tech. Ed.: G. Ye. Larionov.

PURPOSE: The book is intended for engineering and technical personnel in branches of industry using ultrasonic instrumentation.

COVERAGE: The principles of operation and basic technical data on ultrasonic industrial equipment for operations in liquid, gaseous, and solid media are described. Instruments and devices for measuring the basic parameters of ultrasonic phenomena at various frequencies are described, and computation methods for ultrasonic projectors, receivers, and audio and ultrasonic elastic-vibration generators are discussed. The authors thank L. D. Rozenberg, Professor, S. S. Anisimov, Engineer, and B. G. Novitskiy, Engineer, for their assistance. There are 13 references: 12 Soviet and 1 English.

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V. M. and NOVITSKIY, B. G.

"Exciting of acoustic vibrations of great intensity by a hydrodynamic transducer"

report submitted for the 4th Intl. Congress of Acoustics, Copenhagen, Denmark, 21-28 Aug 1962.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

NOSOV, Vladimir Andreyevich, kand. tekhn. nauk; FRIDMAN, V.M., inzh., retsenzent; TSYBA, L.A., inzh., red.izd-va; STARODUB, T.A., tekhn. red.

[Use of ultrasonic waves in the chemical industry] Ul'trazvuk v khimicheskoi promyshlennosti. Kiev, Gostekhizdat, USSR, 1963. 243 p. (MIRA 17:3)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

KOTLYARSKIY, L. B. (Kishinev); FRIDMAN, V. M. (Kishinev)

Erosion effect caused by stalling cavitation and acoustic oscillations in the liquid. Izv. AN SSSR. Mekh. i mashinostr. no.3:162-165 My-Je '64. (MIRA 17:7)

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KOTLYARSKIY, L.B.; FRIDMAN, V.M.

Emulsification by an acoustic hydrodynamic radiator. Koll.zhur. 26 no.6:686-691 N-D '64 (MIRA 18:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy i konstruktorskiy institut khimicheskogo mashinostroyeniya, Moskva.

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BEZZUBOV, Aleksey Dmitriyevich; GARLINSKAYA, Yevgeniya Il'ichna; FRIDMAN, Viktor Mironovich; KONOVALOV, Ye.G., prof., spets. red.; KOVALEVSKAYA, A.I., red.

[Ultrasonics and its use in the food industry] Ultrazvuk i ego primenenie v pishchevoi promyshlennosti. Izd.2., dop. i perer. Moskva, Pishchevaia promyshlennost', 1964. 195 p. (MIRA 18:3)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V.S.

"Bibliography of printed works from 1921 to 1958 (as of July 1, 1958)," published by the Moscow Tuberculosis Research Institute of the Ministry of Health of the R.S.F.S.R. Reviewed by V.S. Fridman. Probl.tub. 37 no.4:115-116 '59. (MIRA 12:10)
(BIBLIOGRAPHY--TUBERCULOSIS)

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FRIDMAN, V. Sh.

Scientific and Technical conference on Mechanization and Automatization in the Match Industry. Der.prom. 9 no.6:26-27 Je '60. (MIRA 13:8)

(Match industry) (Automatic control)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

S/181/63/005/003/013/046
B102/B180

AUTHORS: Fridman, V. Ya., and Shpunt, A. A.

TITLE: Tensile test for crystal splinters ("fracture whiskers")

PERIODICAL: Fizika tverdogo tela, v. 5, no. 3, 1963, 783-789

TEXT: Following earlier bending tests (FTT, 4, 556 and 2258, 1962) carried out with crystal splinters, tensile tests are made with LiF and NaCl splinters diameter 0.7 - 6.3 μ, length 0.5-1.5 mm. The specially designed tester is described in detail. Numerical results are given for a large number of samples. In consecutive tests it was found that, as usual, the strength was equal to or greater than that measured in the previous test. No relation could be found between strength and length of splinter. The strength of NaCl splinters was found to equal that of grown whiskers of the same dimensions. One NaCl sample (510·8·1.7μ) with particularly high strength (σ=8.5 kg/mm^2) showed Lüders lines, indicating that rupture was preceded by plastic deformation. There are 4 figures and 2 tables.

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

Tensile test for crystal splinters ... S/181/63/005/003/013/046
B102/B180

ASSOCIATION: Institut teplofiziki SO AN SSSR, Novosibirsk (Institute of Thermophysics of SO AS USSR, Novosibirsk)

SUBMITTED: October 3, 1962

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

S/181/63/005/003/014/046
B102/B180

AUTHORS: Fridman, V. Ya., and Shpunt, A. A.

TITLE: Investigation of the strength of LiF crystal splinters

PERIODICAL: Fizika tverdogo tela, v. 5, no. 3, 1963, 790-797

TEXT: The authors continue investigations (this issue, p. 783) of the mechanical properties of crystal splinters. Using the same tensile machine they determined the strength in dependence on the chip diameter a. The splinters were taken from the (100) face of optical LiF crystals (purity 99.9%) with an initial dislocation density of 1.10^3 - 1.10^5 cm^{-2} which rose to 10^5 - 10^7 cm^{-2} owing to the treatment. The splinters (0.5 - 40μ thick and 0.1 - 2 mm long) were glued onto sections of tungsten wire (0.1 mm diam), heated (≈200°C) and then stretched. The dependence σ(a) was plotted for 65 samples. The values measured show considerable scatter, due partly to inaccuracy in measuring the sample dimensions (70% and higher errors for a<1μ), for which reason the spread increases with decreasing a, reaching one order of magnitude. In all cases the strength was higher than that of

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massive crystals, e. g. for a = 30-40 μ, 7-10 times. The effect of surface defects and the nature of the fracture was also investigated. One of the samples showed Lüders lines indicative of plastic deformation. The strength in shear tests was found to be 15-20 kg/mm^2, i. e. 20 - 40 times that of massive crystals, but 10-15 times lower than the theoretical value. Induced dislocations do not reduce, but slightly increase, strength. Several samples had strengths of ~40 kg/mm^2, which is about 50 times higher than that of massive crystals, but still one order of magnitude lower than the theoretical value. There are 7 figures.

ASSOCIATION: Institut teplofiziki SO AN SSSR, Novosibirsk (Institute of Thermophysics of SO AS USSR, Novosibirsk)

SUBMITTED: October 3, 1962

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

ACCESSION NR: AP4013510 S/0181/64/006/002/0489/0492

AUTHORS: Fridman, V. Ya.; Shpunt, A. A.

TITLE: Effect of dislocations in whisker crystals of lithium fluoride 20 microns thick

SOURCE: Fizika tverdogo tela, v. 6, no. 2, 1964, 489-492

TOPIC TAGS: dislocation, whisker crystal, lithium fluoride crystal, etching, selective etching, fresh dislocation, dislocation, etch pattern

ABSTRACT: The authors have devised a technique for etching whisker crystals and then examining them under the microscope. They tested 21 crystal fragments (from 4 to 23 microns wide) and 18 synthetic whisker crystals of LiF (1.5 to 15 microns wide). Etching time ranged from 40 sec to 5 min. The whiskers were grown by E. M. Nadgorny*y's method (FTT, 3, 957, 1961). Etching was done on paired samples (one crystal fragment and one whisker crystal) for comparing etch patterns under identical conditions. In all investigated crystal fragments the etch pattern was found to be characteristic of fresh dislocations. On whisker crystals, etched at the same time as the crystal fragments, no etch pattern characteristic of fresh dis-

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

ACCESSION NR: AP4013510

locations was detected. The authors were able to etch whiskers as small as 1.5 microns thick, whereas crystal fragments 4 microns thick were destroyed because of solution. The dislocation density was found to vary considerably in different parts of a crystal fragment, reaching 10^9 cm^{-2}. In places where the crystal fragment is bent, one observes the highest dislocation density and a zone of slipping. These features attest to plastic deformation of the crystal fragment during its development. Orig. art. has: 3 figures.

ASSOCIATION: Institut teplofiziki SO AN SSSR, Novosibirsk (Institute of the Physics of Heat SO AN SSSR)

SUBMITTED: 14Aug63 DATE ACQ: 03Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 005 OTHER: 004

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

RZHANOV, A.V., redaktor; FRIDMAN, V.Ya., redaktor.

[Semiconductor electronic instruments; some problems in the physics and technology of germanium diodes and triodes (collection of translations). Poluprovodnikovye elektronnye pribory; nekotorye voprosy fiziki i tekhnologii germanievykh diodov i triodov, sbornik perevodov. Moskva, Izd-vo inostrannoi lit-ry, 1953. 260 p. (MLRA 7:4)

(Germanium) (Electronic apparatus and appliances)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, V. Ya.

EINSTEIN, Albert; SMORODINSKIY, Ya.A., [translator]; PUZIKOV, L.D., [translator]; FRIDMAN, V.Ya., redaktor; NIKIFOROVA, A.N., tekhnicheskiy redaktor

[The meaning of relativity. Translated from the English] Sushchnost' teorii otnositel'nosti. Perevod s angliiskogo. Moskva, Izd-vo inostrannoi lit-ry, 1955. 159 p. (MLRA 9:3)
(Relativity (Physics))

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FRIDMAN, V. YA.

KARABANOV, V.A., kand.tekhn.nauk, red.; FRIDMAN, V.Ya., red.; KLIMENKO, S.V., tekhn.red.

[Frequency methods in automatic control; a collection of articles. Translations] Chastotnye metody v avtomatike; sbornik statei. Moskva, Izd-vo inostr.lit-ry, 1957. 490 p. (MIRA 11:7)
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BAUM, Filipp Abramovich,; KAPLAN, Samuil Aronovich,; STANYUKOVICH, Kirill Petrovich,; FRIDMAN, V.Ya., red.; GAVRILOV, S.S., tekhn. red.

[Introduction to cosmic gas dynamics] Vvedenie v kosmicheskuiu gazodinamiku. Moskva, Gos. izd-vo fiziko-matematicheskoi lit-ry, 1958. 424 p. (MIRA 11:12)

(Cosmic physics)
(Aerodynamics)

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LEYPUNSKIY, A.I., red.; FURSOV, V.S., doktor fiz.-matem.nauk, red.; STENBOK, I.A., nauchnyy red.; ZAVODCHIKOVA, A.I., red.; FRIDMAN, V.Ya., red.; MAZEL', Ye.I., tekhn.red.

[Works of the Second International Conference on the Peaceful Uses of Atomic Energy. (Selected reports by foreign scientists)]. Trudy Vtoroi mezhdunarodnoi konferentsii po mirnomu ispol'zovaniiu atomnoi energii, Zheneva, 1958. [Izbrannye Doklady inostrannykh uchenykh]. Moskva, Izd-vo Glav.uprav.po ispol'zovaniiu atomnoi energ.pri Sovete Ministrov SSSR. Vol.3. [Physics of nuclear reactors] Fizika iadernykh reaktorov. Pod obshchei red. A.I.Leipunskogo i V.S. Fursova. 1959. 803 p. (MIRA 13:6)

1. International Conference on the Peaceful Uses of Atomic Energy, 2d, Geneva, 1958. 2. Deystvitel'nyy chlen AN USSR (for Leypunskiy). (Nuclear reactors)

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SOLOV'YEV, I.V. [translator]; GUTKIN, L.S., prof., red.; FRIDMAN, V.Ya., red.; GRIBOVA, M.P., tekhn.red.

[Reception of signals in the presence of noise; collection of articles] Priem signalov pri nalichii shuma; sbornik statei. Moskva, Izd-vo inostr.lit-ry, 1960. 342 p. Translated from the English. (MIRA 14:1)
(Radio--Noise) (Radio--Receivers and reception)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

BARILENKO, L.M.[translator]; FRIDMAN, V.Ya.[translator]; TSYPKIN, Ya.Z., doktor tekhn. nauk, red.; MIKHAILEVSKIY, B.N., kand. ekon. nauk, red.; YAKIMENKO, L.P., red.; PRIDANTSEVA, S.V., tekhn. red.

[Control processes in the models of economic systems] Protsessy regulirovaniia v modeliakh ekonomicheskikh sistem; sbornik statei. Moskva, Izd-vo inostr. lit-ry, 1961. 292 p. (MIRA 15:3)
Translated articles.
(Economics, Mathematical) (Economics—Electromechanical analogies)
(Economics—Electronic data processing)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

RAKHMATULLIN, Kh.A., doktor fiz.-matem. nauk, red.; SEMENOV, S.S., red.; FRIDMAN, V.Ya., red.; POPAPENKOVA, Ye.S., tekhn. red.

[Shock tubes] Udarnye truby; sbornik statei. Moskva, Izd-vo inostr. lit-ry, 1962. 699 p. (MIRA 16:9)
(Shock tubes)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

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L 38605-65 EWT(1)/EWT(m)/EPF(c)/EWP(w)/EPF(n)-2/EPR/T/EWP(t)/EWP(b)/EWA(c)/EWA(d)/
ACCESSION NR: AP5005319 S/0161/65/007/002/0649/0650
EEC(b)-2 Pr-4/Ps-4/Pi-4/Pu-4 IJP(c) JD/JW/JG/CG

AUTHORS: Shpunt, A. A.; Fridman, V. Ya.

TITLE: Comparison of the strength of "whiskers" and "chips" of lithium fluoride

SOURCE: Fizika tverdogo tela, v. 7, no. 2, 1965, 649-650

TOPIC TAGS: lithium fluoride, filamentary crystal, whisker, chip, tensile strength

ABSTRACT: This is a continuation of an earlier study (FTT v. 5, 790, 1963) of the transverse strength of crystalline "chips" of LiF, and is devoted to a study of the same dependence for LiF "whiskers" grown from a melt by the method of Nadgornyy (FTT v. 3, 957, 1961). The experimental conditions were described in the earlier paper and also in FTT v. 5, 783, 1963. The test results show that whiskers and chips have equal strength, and their possible differences lie within the experimental error and scatter in the results of the experiments. "The authors thank P. G. Strelkov for continuous interest in the work." Orig. art. has: 1 figure.

ASSOCIATION: Institut teplofiziki SO AN SSSR, Novosibirsk (Institute of Thermophysics SO AN SSSR)

SUBMITTED: 31Aug64 ENCL: 00 SUB CODE: SS

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

L 26512-66 EWT(m) JW/JD/JG

ACC NR: AP6012464 SOURCE CODE: UR/0181/66/008/004/1079/1082

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30
B

AUTHOR: Fridman, V. Ya.

ORG: Siberian Branch, All-Union Scientific Research Institute of Physicotechnical and Radiotechnical Measurements, Novosibirsk (Sibirskiy filial Vsesoyusnogo nauchno-issledovatel'skogo instituta fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy)

TITLE: Strength of filamentary crystals of lithium fluoride thinner than 1 μ

SOURCE: Fizika tverdogo tela, v. 8, no. 4, 1966, 1079-1082

TOPIC TAGS: microinterferometer, lithium fluoride, fiber crystal, tensile strength, MII-4 microinterferometer

ABSTRACT: The authors investigated the tensile strengths of LiF slivers and of LiF whiskers grown from the solution on celophane bags, in the thickness range 1.5 - 0.15 μ, for which there are few published data. The tensile tests were made with a machine described by the author previously (with A. A. Shpunt, FTT v. 5, 790, 1963). Since the determination of the transverse dimensions of such thin filaments entails the greatest difficulty, the author measured the thickness by means of a Linnik microinterferometer (MII-4), and the width from the shadow image produced in an electron microscope. The procedures for these two dimension measurements are described. A plot of the strength of the filamentary crystals against the square root of the transverse area shows that the strength increases rapidly with decreasing thickness, and at ~0.2 μ diameter it approaches the theoretical value of 180 kg/mm². Slivers and grown whiskers of equal transverse dimensions have equal strength within the ex-

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perimental accuracy, which does not exceed 50%. The author thanks A. A. Shpunt who called his attention to the MII-4 instrument, I. A. Ryzhak for taking the electron-microscope pictures, S. V. Kuz'min for a discussion of the experimental procedure, and B. Vragov and A. Stepanchikov for help with the work. Orig. art. has: 3 figures and 3 formulas.

SUB CODE: 20/ SUBM DATE: 15Aug65/ ORIG REF: 007/ OTH REF: 003

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

SHEGAL, G.L., inzh.; FRIDMAN, V.Ye., inzh.

Certain problems encountered in the overall automation of large thermal electric power plant. Elek.sta. 33 no.1:10-13 Ja '62. (MIRA 15:3)

(Electric power plants)(Automatic control)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

AGRANOV, D.M.; FRIDMAN, V.Ye.

Simple signalling circuit for the case of the deviation of controlled parameter. Priborostroenie no.10:25-26 O '63. (MIRA 16:11)

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FRIDMAN, Ya., mayor; VATOLIN, D., kapitan

A new step in the theoretical training of officers. Komm. Vooruzh. Sil 4 no.15:71-74 Ag '64.

(MIRA 17:10)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya. B.

TOMASHOV, N. D., and IA. B. FRIEDMAN

Novyi pribor dlia opredeleniia teploprovodnosti metallov. Moskva, Gosmashmetizdat, 1934. 20 p., illus. (VIAM. Trudy, no.8)

Summary in English.

Bibliography: p.19-20.

Title tr.: New apparatus for determining the heat conductivity of metals.

NN

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

10

Heat Conductivity of Metals and Alloys. I.—A New Apparatus for the Determination of the Heat Conductivity of Metals. N. D. Tomashow and J. B. Fridman (*Peoples Commissariat for Heavy Industry, U.S.S.R., United Aircraft Industries; Trans. Sci. Res. Inst. Aircraft Materials*, 1934, (8), 1-19).—[In Russian, with English summary.] The apparatus comprises a cylindrical rod of the material being tested, 12 mm. in diameter and 260 mm. long, enclosed in a heat insulating protective tube and provided at one end with a small internal resistance unit for heating and at the other end with a water-cooling system. The amount of heat passing along the rod is determined from the amount of cooling water and from the electric supply to the heating unit. A series of 9 thermocouples, 4 in the rod, enables readings to be made of the temperature at all the important points of the apparatus. The accuracy of the pyrometric readings is ± 0·1° C. and of the whole apparatus ± 3°. The results obtained on copper, aluminium, "Y" alloy, and other metals are in close agreement with those of other workers.—A. R. P.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

New uses of dilatometric method in study of alloys
Ya. B. Fridman. *Zavodskaya Lab.* 4, 545-7(1935).
A preliminary communication. Chas. Blanc

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

PROCESSES AND PROPERTIES INDEX

11

Methods for Measuring the Thermal Conductivity of Metals. N. D. Tomashev and J. B. Friklman (*Zavodskaia Laboratoria* (*Works' Lab.*), 1935, **4**, (5), 539-547).—[In Russian.] A survey of the methods and description of installations at the All-Union Institute of Aviation Materials.—D. N. S.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

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21

†Alloys for Sparking Plug Electrodes in Aero-Engines. J. B. Fridman (*Tekhnika Vozdushnogo Flota* (*Technology Aerial Navy*), 1935, (11), 46-54). [In Russian.] The literature is reviewed and some results of tests on plugs of foreign make are described.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

CA

9

Irreversible transformations in solid solutions. Ya. B. Fridman. *J. Tech. Phys.* (U. S. S. R.) 6, 78-82(1936).—In binary alloys Fe-Ni and Fe-Mn hysteresis between the transformations $\gamma \rightarrow \alpha$ on cooling and $\alpha \rightarrow \gamma$ on heating is a linear function of concn. The effect is proportional to the at. radius. In three-component alloys Fe-Cr-Ni and for carbides in Cr-Ni steel 18 8, hysteresis is also a linearly increasing function of concn. On simultaneous action of temp. and deformation, hysteresis is not eliminated but only decreased to 17-25%. The absence of the $\gamma \rightarrow \alpha$ transformation of austenite steels above 150° is due to hysteresis.

P. H. Rathmann

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

Special Steels with Anomalies in the Thermal Dilatation and in the Dependence of the Modulus of Elasticity on the Temperature. (Contribution to the Theory of Invar and Elinvar.) J. B. Friedman. (Katshestvennaia Stal, 1937, No. 1, pp. 47–54). The paper contains a discussion of the existing theories of the invar alloys and a new theory proposed by the author. He assumes that the presence of iron atoms in the γ-lattice of nickel causes internal stresses and a consequent swelling of the crystal. This "primary" mechanical dilatation causes a "secondary" swelling effect, due to magnetic forces (analagous to the well-known "mechanostriction" effect). The decrease in the magnetic swelling with increasing temperature and its disappearance at the Curie point counterbalance the normal thermal dilatation, and result in the volume remaining constant up to the Curie point. The mechanical swelling disappears only above the melting point (1425° C.), causing a further volume anomaly of invar (the specific volume decreases on fusion, and a further contraction takes place up to 1700° C.). It is thus not necessary to assume the existence of a compound Ni_3Fe to explain the properties of invar. The anomalies of the elastic modulus of elinvar are explained in the same way; it is shown that the relation of the dilatation coefficient to the temperature coefficient of the modulus of elasticity is the same (-4×10^{-2}) for a number of different alloys. The "magnetic" theory of invar predicts that no alloys of this kind can be prepared with a non-ferromagnetic base. (In Russian).

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

M

2

Influence of Chromium on the γ Region of the Iron-Nickel Alloys. The Transformation Diagrams of "Irreversible" Alloys. J. B. Fridman (*Zhur. Fizich. Khimii* (*J. Phys. Chem.*), 1937, 9, (4), 502–509).—[In Russian.] F. discusses the influence of chromium on the γ region of the iron-nickel system, using data from the literature as well as from his own experiments. The A_3 point is lowered at first with an increase in chromium concentration and later begins to rise.—N. A.

COMMON ELEMENTS

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COMMON VARIABLES INDEX

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Electrostatics of colloids. Ya. Fridman and M. Barvinok. *Colloid J.* (U. S. S. R.) 3, 777-83(1937). The effect of the electrolytes KNO_3, KCl, $Ba(NO_3)_2$, $BaCl_2$, $Hg(NO_3)_2$, $HgCl_2$ and $FeCl_3$ on the coagulation of Ag hydrosol is studied. The exptl. results are in accord with the theory of Stern (*C. A.* 19, 770) for the coagulation of colloids. John Livak

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17

The Ageing of Heat-Resisting Austenitic Steels. Ya. B. Fridman. (Kachestvennaya Stal, 1937, No. 5-6, pp. 52-57). (In Russian). A study was made of the ageing process in two austenitic heat-resistant steels, the first of which contained 19·3% of chromium, 25·5% of nickel and 2·8% of silicon, whilst the second contained 13·5% of chromium, 14·4% of nickel and 2·5% of tungsten. The effect of quenching from between 900° and 1400° C. on the physical and mechanical properties of the steels was studied, and it was shown that changes in these properties reflect the dissolution of carbides, the grain growth and the other phenomena which occur on heating to the higher quenching temperatures. The increase in the impact resistance with dissolution of the carbides is particularly marked. Dilatometric analysis of the quenched steels indicated precipitation of carbides from the austenite on heating to 625–650° C., this precipitation being accompanied by a shrinkage of the specimens. The actual ageing process between 600° and 900° C. was followed by hardness measurements, both at constant temperature during various periods of time and on heating to various temperatures for a fixed time. In tungsten-bearing steel, two distinct ageing stages, due to precipitation of the carbides of chromium and tungsten, respectively, were noticed. Finally, it was shown that cold deformation lowers the temperature at which ageing begins and also accelerates the process. The results of all the investigations were used to establish suitable heat treatments for these steels.

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PROCESSES AND PROPERTIES INDEX

Investigation of Chromium-Nickel Austenitic-Martensitic Steels. Y. B. Fridman. (Metallurgist, Russia, 1937, vol. 12, No. 5, May, pp. 63-73). (In Russian). The author discusses an investigation of the group of steels intermediate between the high-alloy austenitic type and the lower-alloy martensitic type; in particular a steel containing 0·35% of carbon, 13·3% of chromium, 8% of nickel and 2·8% of silicon is considered. Quenching from 1100° C. produces an entirely austenitic structure, while annealing at 700-900° C. causes the breakdown of the solid solution of chromium carbides in the austenite which becomes unstable. By suitable treatment, therefore, a mixed martensite-austenite structure is obtained since the pure austenite decomposes in the temperature interval 140-120° C.; this structure is associated with a high degree of hardness. In this class of steels no austenite ⟶ martensite transformation occurs above 0° C. unless the carbides have been removed from solid solution by annealing, and there are no intermediate products such as sorbite or troostite. The increase in hardness due to the separation of carbides is particularly important when the steel is to be employed at high temperatures.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

C 4

Plasticity of polycrystalline solid solutions of metals Va. B. Fridman. *Compt. rend. acad. sci. U. R. S. S.* 23, 683 5(1939).—The influence of compn. on the plasticity of polycryst. solid solns. is discussed, the reduction of the area being chosen in preference to the relative elongation for estg. the max. plasticity. Pure solid solns. with Ni, Cu, Ag, Al and other face-centered metals as a basis do not show cold brittleness but the plasticity decreases with increase in concn. Anomalies in the system Cu-Zn and Cu-Sn are explained by the marked effect of impurities (e. g., O) on the plasticity of Cu. Pure solid solns. with Fe or Mg as a basis exhibit cold brittleness but the plasticity increases with concn. in the temp. region of cold-brittleness, the temp. interval of the plastic state also widening. At high temp. the plasticity decreases with increase in concn. B. C. P. A.

Lab. Mechanical Testing of Materials, Inst. Gen. + Inorg. Chemistry

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M

2

On the Brittleness of Polycrystalline Solid Solutions Based on γ-Iron and Magnesium. Ya. B. Fridman and M. S. Denisova (*ZAur. Tekhn. Fiziki*, 1939, **9**, (16), 1465–1477).—[In Russian.] The addition of a non brittle constituent to a solid solution (up to 5% of nickel in iron or 6% of aluminium in magnesium) markedly reduces the brittleness of the alloy. Curves of true stress against extension show that the basic factor influencing the phenomenon of static cold-brittleness appears to be the low true tensile strength of the brittle basic metal, which is greatly increased on addition of the non cold brittle constituent. The physical principles underlying the phenomenon are not yet clear.—N. A.

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CA

Cold-brittleness of aluminum and its alloys. Ya. B. Fridman and Z. Ya. Kirenskaya. *J. Tech. Phys. (U. S. S. R.)* 10, 554-67 (1940).—Certain Al alloys, or Al contg. certain impurities can undergo transition to a cold-brittle state. Cast Al (99.5%) becomes brittle on cooling from 20° to −70°. Pressed Al from the same melt does not show any signs of cold-brittleness at temps. as low as −195°. Pure cast Al (99.98%) is not cold-brittle. Most cast Al-alloys (e. g., Al + 10% Mg) which are plastic at 20° show a rapid fall of the impact strength with the decreasing temps. The pressed alloys of the type Al + 8% Mg and Al + 10% Mg are decidedly cold-brittle as a result of inhomogeneity of grain boundaries.

Roksalana Gamow

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CA

32

The effect of various admixtures on the activity of aluminum chloride in the cracking of hydrocarbons. I. Va. Fridman. *J. Applied Chem.* (U. S. S. R.) 13, 1197-1203(in French, 1203)(1940).—An admixt. (in large amts.) of chlorides of alkali metals decreased the activity of $AlCl_3$. Double salts of $AlCl_3$ with these chlorides had better cracking action than the mixts. A mixt. of KCl (0.5%) with $AlCl_3$ was superior to pure $AlCl_3$. Small quantities of chlorides of metals that form cryst. compds. with $AlCl_3$ that have a pos. heat of formation increased the gasoline fraction (max.), but larger amts. decreased it. At max. gasoline formation, the sp. gr. of the gasoline was the lowest. The max. yield of gasoline increased with an increase of the mol. fraction of the admixted salt. Chlorides of metals which do not form cryst. compds. with $AlCl_3$ or form them with a neg. heat of reaction when they were added to $AlCl_3$ in increasing amts. caused an increased yield of gasoline, the best result being at 4-5% of admixt. The influence of chlorides of P, S and Sb was approx. the same as that of chlorides of metals of the second type just mentioned. $CaCO_3$ and $CaSO_4$ always decreased the yield of gasoline. Admixt. of HCl with $AlCl_3$ gave gasoline of low sp. gr. that contained relatively large proportions of iso compds. On the other hand, the addn. of $AlCl_3.6NH_3$ to a mixt. of $AlCl_3$ with HCl rapidly decreased the yield, and 2.0% of NH_3 prevented cracking. The following compds. were used with $AlCl_3$: NaCl, KCl, LiCl, $CaCl_2$, $MgCl_2$, $BaCl_2$, CuCl, $ZnCl_2$, $FeCl_3$, $CrCl_3$, $SbCl_3$, S_2Cl_2, $TiCl_4$, PCl_5, HCl, $CaCO_3$, $CaSO_4$ and $AlCl_3.6NH_3$.

A. A. Podgorny

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1ST AND 2ND ORDERS

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CA

9

Static plasticity of metals. Ya. B. Fridman. *Zavodskaya Lab.* 9, 761-75(1940); cf. C. A. 34, 4715. A crit. review of the literature with 50 references.

B. Z. Kamich

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PROCESSES AND PROPERTIES INDEX

Evaluation of the Static Ductility of Metals. Ya. B. Fridman. (Zavodskaya Laboratoriya, 1940, No. 7, pp. 761–775). (In Russian). The author discusses in detail the problem of the choice of either the relative elongation or the reduction of area as a measure of the ductility of a metal or alloy, because progressive alloying of a metal may have opposite effects on these two values which are at present used rather indiscriminately as criteria for ductility. The work expended in static deformation and the relation between the different variables involved are also considered and experimental data are presented.

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1ST AND 2ND ORDERS

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ca

9

Metalloceramic aluminum. Ya. B. Fridman and M. S. Denisova. *Vestnik Metallopromy.* 20, No. 11-12, 71-2 (1940).—Al powder of 0.02-0.2 mm. was compressed into rods under 30 tons and then heated for 3 hrs. in vacuo at 650°. The specimens were not dense and showed brittleness. This was overcome by calcining the powder for 30 min. at 400° prior to compression. The specimens showed the least stratification and brittleness and could be bent to 30-40° without fracture. Tests were also made with pyrotechnic Al powder of 0.03-0.35 mm. and contg. 0.77-0.96% Fe. In this case no preliminary calcination was required, satisfactory results being obtained by compressing at 30 tons and heating for 3 hrs. in vacuo at 625-635°. Below 625° there was no fusion and the specimens were brittle while above 635° they began to soften. The plasticity of the specimens from pyrotechnic Al powder was higher than from powder used in paint manuf. H. Z. V.

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PROCESSES AND PROPERTIES INDEX

True Diagrams of the Deformation and Mechanical Properties of Metals. Ya. B. Fridman (*Zhur. Tekhn. Fiziki*, 1941, 11, (10), 902-917). – [In Russian.] A full picture of the mechanical properties of metals could be obtained by studying a complete stress-strain diagram from the region of elastic deformation up to the breaking point. High values of deformation are best expressed in terms of the true strains of Ludwik. If the true reduction of area is found, a number of relationships can be determined which are characteristic of the plastic state: the strength of single and polycrystalline materials can be compared and the true value of the statistical work of deformation can be determined. Graphs necessary for the calculations are given.—N. A.

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M

On the Mechanism of the Fracture of Metals. Ya. B. Fridman (*Zhur. Tekhn. Fiziki*, 1941, 11, (11), 903–908).—[In Russian.] The views of N. N. Davidenkov on the two types of fracture of metals—brittle and tough—are discussed and confirmed, and various cases of fracture under single loading are considered from a general point of view.—N. A.

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MA

15

Evaluating the Workability of Cast Alloys. Ya. B. Fridman and Z. V. Kirinskaya (*Zavod. Lab.* (*Works' Lab.*), 1941, **10**, 80-86; *Chem. Zentr.*, 194[illegible], **113**, (I), 1077; *C. Abs.*, 1943, **37**, 3037).—[In Russian.] The workability of brittle cast iron, magnesium, and aluminium alloys can be estimated by punching discs, 12 mm. in diameter by 3-7 mm. thick, from the alloys, and observing cracking in the discs. The method is as reliable as the measurement of elongation in tensile test specimens.

1943

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Yakov Borisovich

Author, together with A. P. Sivertsev and A. F. Dobryanskii, of a paper on "Determination of the Viscosity of Oils at Low Temperatures".

PUB: Conf. on Viscosity of Liquids and Colloidal Solns. 1, 173-80 (1941)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

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3RD AND 4TH ORDERS

BC

B-I--4

[redacted] J. B. Fridman [redacted]

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YAKOV BORISOVICH

Edinaia teoriia prochnosti materialov; s predisl. N. N. Davidenkova. Moskva, NKAP SSSR, Oborongiz, 1943. 94 p. 2 pl. on 1 l., diagrs.

"Summary of the paper 'General theory of strength and diagram of mechanical state' by Dr. Jacob B. Friedman": p. 90-94.

Bibliography: p. 94-95.

General theory of the strength of materials.

DNC DLC: TA405.F7

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

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YAKOV, BORISOVICH

FRIDMAN, YAKOV BORISOVICH.

Edinaia teoriia prochnosti materialov; s predisloviem akademika N.N. Davidenkova. Moskva, Oborongiz, 1943. 95 p., 2 pl. on 1 l., diagrs.

At head of title: Vsesoiuznyi nauchno-issledovatel'skii institut aviatsionnykh materialov (VIAM).

Summary in English.

Bibliography: p. 94-94.

Title tr.: General theory of the strength of materials.

TA405.F7

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

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PROCESSES AND PROPERTIES INDEX

A UNIFIED THEORY OF THE STRENGTH OF MATERIALS AND A DIAGRAM OF MECHANICAL STATE. YA B. FRIDMAN (ZHUR. TEKHN. FIZIKE, 1943, 13, (9/10), 502-519).-- (In Russian.) As a result of numerous investigations, references to which are given, F. suggests a general theory o the strength of materials, w hichis based essentially on the theory of maximum deformation and on the theory of maximum shear stress. The main feature of the theory of maximum deforma tion is its applicability to those cases where interatomic forces enter into the calculation of the equilibrium of the forces inthe system, while by the use of the theory of maximum shear stress, it is possible to explain the behaviour of materials during plastic deformation and fracture . It is considered that at a certain temperature and rate of deformation a material fails either with a brittle fracture under tensional stress or with a ductile fracture under shear stress. In view of the fact that the main mechanical properties, viz., tensile strength, shear strength, and elastic limit, do not depend on the type of stress, it is possible to plot a graph (called by F. the diagram of mechanical state), which gives the equivalent tension, compression, and shear-stress components for any type of stress in the system.—V. K.

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M

2

THE INFLUENCE OF COMPOSITION ON THE PLASTICITY OF METALLIC SOLID SOLUTIONS. YA. B. FRIDMAN AND M. S. DENISOVA (IZVEST. SEKT. FIZIKO-KHIM. ANAL., 1943 16, (1), 184-196) (IN Russian) A conception of the plasticity and toughness of metals is put forward in which the criterion of plasticity is taken as the reduction of area. It is shown that metals can give two physically and mechanically different types of failure; by shear, characteristic of a tough material, and by rupture, characteristic of a brittle one. On this basis the behaviour of solid solutions of non-cold -brittle metals will be different fromthat of solid solutions of brittle metals. It is shown that in ductile failure by shear (copper-base, nickel-, aluminium-, lead-, silver-base alloys and α-iron-and magnesium-base alloys above the critical range of brittleness) plasticity decreases with increase in concentration of the dissolved constituent, as was shown by Sachs and Jeffries andArcher. In brittle failure by rupture (α-iron at 195°C magnesium at 20°C., and zinc under certain conditions) plasticity and toughness increase with increase in

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5

11

ON THE STRENGTH AND DUCTILITY OF QUENCHED AND TEMPERED STEEL

J. B. Friedman and T. A. Volodina. (Comptes Rendus (Doklady) de l'Academie des Sciences de l'URSS, 1945, vol. 48, No. 8, pp. 559-562).

Data on the mechanical properties of Chromansil steel (containing about 1% each of chromium and silicon) are presented and discussed and it is shown that whilst it behaves in a brittle manner in the tensile test after quenching and tempering, it has appreciable ductility when tested in torsion.

All-Union Sci. Res. Inst.

METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIEDMAN, YAKOV BORISOVICH

Deformatsiia i razrushenie metallov pri staticheskikh i udarnykh nagruzkakh. Moskva, Oborongiz, 1946. 227, (1) p. illus.

Bibliography: p. 223-(228)

Deformation and failure of metals under static and impact loads.)

DLC: TA460. F74

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

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Y. B.

FRIDMAN, YAKOV BORISOVICH.

Deformatsiia i razushenie metallov pri staticheskikh i udarnykh nagruzkakh. Moskva, Oborongiz, 1946. 228 p., illus.

At head of title: Vsesoiuznyi ordena Lenina nauchno-issledovatel'skii institut aviatsionnykh materialov. (VIAM).

Bibliography: p.223-228.

Title tr.: Deformations and failure of metals under static and dynamic loads.

TA 460.F74

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIEDMAN, Y. B

FRIEDMAN, YAKOV BORISOVICH.

Mekhanicheskie svoistva metallov. Moskva, Glav. red. aviats. lit-ry, 1946. 423 p., illus.

At head of title: Vsesoiuznyi ordena Lenina nauchno-issledovatel'skii institut aviatsionnykh materialov (VIAM).

Includes bibliographies.

Title tr.: Mechanical properties of metals.

TA460.F745

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

9

Effect of structure and composition on the mechanical properties of alloys. Ya. B. Fridman. *Vestnik Inzhenerov i Tekh.* 1946, No. 2, 44-50. The effects of the following factors on the mech. properties of steel are analyzed: grain size, concn. of solid soln., intercryst. cold brittleness, and temp. of temper following hardening. The mech. properties are characterized by a diagram of the mech. state. On such a diagram are entered: (a) kind of stress, (b) state of stress, and (c) the entire course of the curve and not only the resistance to large plastic deformation, e.g., Brinell hardness. As the grain size increases, the tensile strength declines. Thus when metals are tested by pull the plasticity and viscosity of large grained metals appear greatly lowered. The resistance to shear is only little affected by the grain size, and therefore when metals are tested by shearing action their brittleness goes unnoticed. That the plasticity of metals is lowered as the concn. of solid solns. increases is true only of metals which are in a viscous state, e.g., Al and Cu alloys or α-Fe and Mg-base alloys above certain temps. The plasticity and viscosity of metals which are in a brittle state increase as the concn. of solid soln. rises, e.g., Mg alloys when pulled and bent at 20° and Fe-Ni alloys when pulled and bent at 195°. Some alloys which ordinarily are not cold-brittle become so in the presence of a heterogeneous structure, e.g., Al alloys contg. 8-10% of Mg and austenitic steels with an increased C content. Usually in these cases intercryst. cracking is noticed. Cf. *C.A.* 34, 1954[8]; 35, 1744[1].

M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

C.A.

Machinability and the microstructure of metals. A. M. Palil and Ya. B. Fridman. *Vestnik Mashinostroeniya* 27, No. 3, 26-44(1947).—The stresses and strains arising in a work piece being machined are analyzed. There are 2 elastic deformations: a general one of the entire work piece and a local one under the cutter. Plastic deformation is localized in a small volume at the cutter's edge. It appears as stretching of grains, hardening, and evolution of heat. Workability is closely connected with the microstructure. Large-grained pearlitic steels are easier worked than small-grain steels. Under the same cutting conditions, lamellar pearlite gives a better surface than grainy pearlite. The workability of alloys contg. solid solns. depend on the concn of the latter. The microstructure of steels unfavorable to machining can be altered by heat treatment. M. Hosch

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

ROYTMAN, I. M. and FRIDMAN, Ya. B.

"The Influence of Alternating Plastic Deformation on the Non-Equilibrium Alloys," Dok. AN, 57, No. 9, 1947

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya.

Prof., All-Union Sci. Res. Inst. Aviation Materials, -1947-.

"Deformation and Destruction of Metals in Static and Percussion Loads," 1946;

"The Mechanical Properties of Metals," 1946. Stalin 2nd Prize, 1946, publs.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

M

2

MECHANICAL PROPERTIES AND DIAGRAMS OF MECHANICAL CONDITION OF ANTI FRICTION ALLOYS. V. S. RZHEZNIDOV AND YA. B. FRIDMAN (ZAVOD. LAB. 1946 12 (6), 595-601) (In Russian) The mechanical properties of some anti-friction alloys (Babbitt metal and lead-and tin-lead-bronzes) have been studied in tension, torsion, and compression, Diagrams of deformation and diagrams of mechanical condition have been constructed. It is shown that type of failure, plasticity, and toughness of cast copper-lead, and copper-lead-tin-bronzes depend on the mode of stressing; in tension there is brittle fracture with small plastivity and toughness; in compression failure occurs by shear, and there is appreciable plasticity and toughness; while in torsion failure occurs partly by shear and partly by rupture, and the plasticity and toughness have intermediate values. NA

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

15

B

On the Notch Sensitivity of High-Strength Alloys. (In English.) J. B. Friedman and T. A. Volodina. *Comptes Rendus de l'Academie des Sciences de l'URSS*, v. 55, no. 8, 1947, p. 743-746.

The notch sensitivities of duralumin and high-strength aluminum-alloy bars were investigated in order to find out whether the high notch sensitivity of alloy steels was a property of other alloys as well. Effects of different heat treatments were also evaluated. Results indicate that notched aluminum-alloy specimens also show diminished ductility with increasing ultimate strength.

COMMON ELEMENTS

MATERIALS INDEX

METALLURGICAL LITERATURE CLASSIFICATION

3RD AND 4TH ORDERS

2ND LETTER

AUTHOR INDEX

1ST AND 2ND LETTERS

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

13

B

176. **Mechanical Testing of Materials by the Torsion Method.** Ya. B. Fridman. *Metallurgia*, v. 37, Nov. 1947, p. 53-54. Based on paper in *Zavodskaia Laboratoriya*, v. 11, no. 9, 1945, p. 852.

Compares the 4 basic methods of loading and points out disadvantages of methods other than torsion for cases in which it is important to determine mechanical properties under conditions of considerable deformation. When, however, it is necessary to reveal resistance to rupture, tension or bend testing is recommended.

METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

A

Q

3-362. **Repeated-Load Tests on Metals in the Plastic Zone.** I. M. Pottman and Ia. B. Fridman. *Factory Laboratory (U.S.S.R.)*, V. 13, April 1947, p. 452-463 (In Russian.)

Apparatus and results of experiments on Armco iron, copper, high-strength steels, and aluminum alloys

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

Generalized Mechanical Properties of Solid Bodies. J. B. Friedmann. (Comptes Rendus de l'Académie des Sciences, U.R.S.S. (Doklady), 1947, vol. 55, Mar. 30, No. 9, pp. 817-820: [Abstract]. Applied Mechanics Reviews, 1948, vol. 1, Feb., p. 48). This article presents results of tests on duralumin, high-strength aluminum zinc magnesium alloys, austenitic 18 8 steels and high strength steel of the Chromansil type. By plotting the "generalized" quantities of Ludwig, maximum shear stress against maximum shear strain, the author endeavours to show that the experimental points for several modes of loading (tension, compression, torsion, double shear) can be represented by a single curve for any one material. This is successfully done for all the materials tested except the high-strength steels, which show consistent anomalies between the tensile and torsional loadings. For all but these latter materials the "generalized shearing strength" (the value of the maximum shear stress at shearing rupture) are practically independent of the mode of loading.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

13

Influence of Offset During Investigation of Torsion. (In Russian.) I. M. Roitman and Ya. B. Fridman. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 14, Aug. 1948, p. 969-972.

Indicates, on the basis of experimental investigation, that offset of specimens up to 4° does not show marked effect on the results of normal torsion tests on most of the materials which are fractured by shearing action.

All-Union Inst. Aviation Materials

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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USSR/Physics
Plastic Flow

Dec 48

"A Study of the Plasticity of Sheet Materials," Ya. B. Fridman, A. A. Bat', All-Union Inst of Avn Materials, 7½ pp

"Zavdi Lab" Vol XIV, No 12 - p.1462-69

Basic material for experiments made to investigate some factors influencing plasticity of sheet materials was a steel of the following composition: 0.36% C, 1.01% Cr, 0.97% Si, 0.96% Mn, and 0.1% Ni. Steel was in form of rolled sheet 3 mm thick, oil-quenched from 880° C. It was brought to a state of high or

49/49T106

USSR/Physics (Contd)

Dec 48

medium toughness by tempering at 200 and 550° C, respectively. Specimens were cut from these sheets for tensile tests and for Erichsen tests. Nonferrous materials were also used for some tests.

49/49T106

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

USSR/Metals Sep 48

Plastic Deformation
Resilience

"Extent of Deformation," Ya. B. Fridman, A. A. Bat', All-Union Inst of Aviation Materials, 6½ pp

"Zavod Lab" Vol XIV, No 9 p. 1124-30

Report of experiments on various steels, copper, aluminum and duralumin. Results showed differences in magnitude and form of deformed volume in alloys and medium- and high-tensile steels. True resilience, $a_{k\ true}$ (the ratio $\frac{A}{V_{def}}$) reflects behaviour of material in shock bending tests more accurately than the usual value a_k. V_{def} is

[redacted] 16/49T92

USSR/Metals (Contd) Sep 48

practically the same for static and dynamic tests.

[redacted] 16/49T92

PA 16/49T92

FRIDMAN, YA. B.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

18

BEND-TEST ON PERIPHERALLY SUPPORTED DISCS. Ya. N. Fridman and I.M. Roitman. (Zavodskaya Laboratoriya, 1948, vol 14, Oct., pp 1238-1240). (in Russian). The use of peripherally supported discs 3 mm. thick and 58 mm. in dia. for bend tests is described, and results obtained thereby for specimens of a steel subjected to tempering at up to 600°C. are presented together with the corresponding results obtained when the specimens were in the form of 50 x 50 mm. plates of the same thickness.—C.K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya. B.

"The Problem of the Mechanism of Replacing Complex Ions" Zhur. Ovshch. Khim. 18, No. 6, 1948. Lab. Inorg. Chem. Kirgiz Affiliate, Acad. Sci. -c1948-.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YA. B., PROF

FA 4/49T40

USSR/Engineering Apr 48
Testing and Standardization
Testing Procedures

"Reply to the Questionnaire," Prof Ya. B. Fridman, Dr Tech Sci, VIAM, 2 pp

"Zavod Lab" Vol XIV, No 4

Divides properties into primary and secondary classes. Discusses bending stresses, and points out influence of diameter of specimen on result of laboratory tests. Considers resilience best criterion of uniformity of parts.

4/49T40

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

PA 38/49T83

USSR/Engineering
Stress Analysis
Strength - Testing

Mar 49

"Micromechanical Method of Studying Materials," I. M. Roytman, Ya. B. Fridman, 10 pp

"Zhur Tekh Fiz" Vol XIX, No 3 - p.421-30

Developed micromechanical method to test materials under tension, bending, torsion, and shearing. Worked out new construction for universal "micromachine," which permits static tests to be carried out under various forms of load. Introduces example using micromechanical method to study the dimensional factor, the deformed state in the neck [redacted]

38/49T83

USSR/Engineering (Contd)

Mar 49

of elongated sample, and mechanical characteristics in various parts of welded joints. Submitted 23 Nov 48.

FRIDMAN, YA. B.

[redacted]

38/49T83

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YA. B.

No. 37367--Puti povysheniya staticheskoy konstruktivnoy prochnosti. V sb: Povyshenie prochnosti detaley mashin. M.-L., 1949, S. 22-34.- Bibliogr: 8 nazv.

So: Letopis' Zhurnel'nykk Statey, Vol. 7, 1949.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YAKOV BORISOVICH, and V. V. ELISEEVA

O povyshenii konstruktivnoi prochnosti za schet razgruzhaiushchikh nadrezov. (Vestn. Mash., 1949, no. 5, p. 5-9)

Includes bibliography.

Increase of structural strength by means of surface incisions.

DLC: TN4.V4

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

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

M

On the Development and Co-Ordination of Theories of the Strength of Materials. Ya. B. Fridman (*Zavod. Lab.*, 1949, **15**, (2), 223-231).—[In Russian]. It is impossible to evolve a theory of the strength of materials on a purely mathematical basis; the actual physical processes leading to loss of strength must be taken into consideration. Leaving aside complex destructive phenomena, e.g. wear and loss of stability, there are three basic kinds of loss of strength to consider: plastic flow, shear, and tensile fracture (usually brittle), and therefore three distinct safety factors are involved. It is proposed to characterize each material by its plastic flow limit, shear strength, tensile strength, and a generalized stress strain function. Deformation laws established for a given material (steel or copper) cannot usually be applied without modification to other materials. 34 references.—T. O. L.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YA. B.

PA 38/49T82

USSR/Engineering Mar 49
Deformation
Plasticity

"A Study of the Deformed State by Means of a 'Rolled Dividing Network,'" T. K. Zilova, Ya. B. Fridman, 9 pp

"Zhur Tekh Fiz" Vol XIX, No 3 - p. 431-40

Makes distinction between local (or maximum) and average plasticity of a sample. Values coincide only in uniform deformed state. States that local plasticity for uniform deformed state or small deformed spaces must be studied

38/49T82

USSR/Engineering (Contd) Mar 49

first to establish rules of plastic deformation. Uses new method of "rolled dividing network," which replaces the photo-network, to study deformed state in smooth and notched aluminum and steel samples. Showed that maximum shear at top of pointed notch is equal to maximum shear of smooth sample for aluminum. Thus, the notch decreases average plasticity, but does not affect maximum plasticity. Submitted 25 Nov 48.

38/49T82

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIEDMAN, IA.B and ROITMAN, I.M.

Mikromekhanicheskii metod ispytaniia metallov. Moskva, Oborongiz, 1950. 224 p.

Micromechanical method of testing metals

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

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

USSR/Metals - Testing Sep 50

PA 169T54

"Influence of the Soft Surface Layers on the Mechanical Properties of Notched Specimens," Ya. B. Fridman, L. M. Pevzner

"Zavod Lab" Vol XVI, No 9, pp 1094-1097

Reviews and discusses literature on subject and makes conclusions: Distribution of plastic deformations in notched section is nonuniform. Surface layers are deformed more greatly than inner layers. Plasticity in notch may be considerably increased by softening of comparatively thin surface layer. Surface decarburization of 0.1-0.15 mm in depth

169T54

USSR/Metals - Testing (Contd) Sep 50

increases impact strength of steel from 5-6 to 9-10 kg/sq cm.

169T54

FRIDMAN, YA. B.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya. B

176T88

USSR/Metals - Strength 1 Aug 50

"Process of Breakdown in Plastic Metals," Ya. B. Fridman, T. K. Zilova, All-Union Sci Res Inst of Avn Materials

"Dok Ak Nauk SSSR" Vol LXXIII, No 4, pp 697-700

Investigates local plastic deformation along length of sample near fractured zone during torsional tests of steel samples (40 KhNMA). Concludes early stages of initial collapse in metals should be clearly distinguished to prevent later total breakdown, that plastic breakdown is process that develops rather slowly, and that

[redacted] 176T88

USSR/Metals - Strength (Contd) 1 Aug 50

theoretical and practical theories of plastic deformation should study phys states at beginning of breakdown rather than in its late phases. Submitted 3 Jun 50 by Acad P. A. Rebinder.

[redacted] 176T88

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

13

B

Concentration of Deformation and Stresses During Large Plastic Deformations. (In Russian.) Ya. B. Fridman and T. K. Zilova. *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR), new ser., v. 73, Aug. 21, 1950, p. 1185-1188.

The above was studied using the method of a rolled-on mesh pattern. Local deformations are determined from distortions of the pattern. Coefficient of deformation concentration was calculated to be the ratio of maximum shear to mean shear. Application of the results to the study of stress concentration in different types of test specimens (plain and notched) is indicated. Data are tabulated and charted.

COMMON ELEMENTS

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OPEN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YA. B.

FDD PA 169T37

USSR/Metals - Testing Aug 50

"Evaluation of Plasticity in Notches on Half-Ring and Rectangular-Bar Specimens," Ya. B. Fridman, A. A. Bat', T. A. Volodina

"Zavod Lab" Vol XVI, No 8, pp 966-975

Discusses simple method for evaluating notch sensitivity of metals under static loads. Method, based on measuring plasticity in notch of specimen bent by static load was tested on steels and aluminum alloys of high and medium strength at room temperature and partially at -70°.

169T37

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

Met. Rev.
1952

Q-Mechanical Properties
And Test Methods;
Deformation

119-Q. Strains and Stresses. *Metal Progress*, v. 60, Dec. 1951, p. 162, 164. (Condensed from "Concentration of Strains and Stresses at Large Plastic Strains," Ya. B. Fridman and T. K. Zilova).

Previously abstracted from *Doklady Akademii Nauk SSSR*. See item 835-Q, 1950. (Q24, Q25)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya. B.

USSR/Metals - Aluminum Alloys, Properties Jan 52

"Mechanical Properties of Cast Aluminum Alloys," N. M. Beskorovaynyy, Cand Tech Sci, Ya. B. Fridman, Dr Tech Sci, Moscow Mech Inst

"Litey Proizvod" No 1, pp 15-20

Studies mech properties of Al-base alloy with 9.0-10.6% Si under loading for tension, compression, torsion and bending. Investigates effect of dimensions and shape of specimens and mode of loading on mech properties of cast alloys and discusses effect of modification with metallic sodium on grain size.

204T68

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

1. FRIDMAN, YA.B.

2. USSR (600)

4. Technology

7. Mechanical properties of metal. Izd. 2-e. Moskva. Oborongiz, 1952

9. Monthly List of Russian Accessions, Library of Congress, March, 1953, Unclassified.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

1. FRIDMAN, Ya. B.; VOLODINA, T. A.

2. USSR (600)

4. Metals

7. Effect of relieving groove on the static strength of metals. Vest. mash. 32 no. 7 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YA. B.

Effect of Cracks on the Mechanical Properties of Metals in Different States of Stress. Ya. B. Fridman, T. K. Zilova, and N. I. Zhukova. (*Doklady Akad. Nauk S.S.S.R.*, 1952, 84, (1), 67-70). Specimens submitted to torsion were subsequently examined under tensile stress and the appearance and effects of cracks observed.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, YA. B.

USSR/Metallurgy - Fibers 1 Oct 52

"Most Advantageous Direction of Fibers in Articles Made of Anisotropic Materials," V. K. Grigorovich, N. D. Sobolev, and Ya. B. Fridman, Moscow Mech Inst and Second State Ball-Bearing Plant.

DAN SSSR, Vol 86, No 4, pp 703-706

State that anisotropy of the strength of metals possessing fibrous structure depends remarkably on directions of the fibers. Tabulate characteristics for various steels. Find that orientation of fibers along lines of max tensile strength should be considered during hot or mechanical treatment of metallic and nonmetallic articles Presented by Acad I. P. Bardin 8 Aug 52.

PA 252T45

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya. B. and LOFOV, N. I.

"Increasing the Strength of Machine Parts by Cold Hardening Process," page 3 of the book "Problems on Strength and Deformation of Metals and Alloys", released by the Moscow Engineer-Physics Inst., Mashgiz, 1954.

TABCON D-342613, 24 Oct 1955

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

POPOV, N.I., inzhener; FRIDMAN, Ya.B., doktor tekhnicheskikh nauk, professor.

Increasing the strength of machine parts by the method of oriented peening. Sbor.nauch.rab.MIFI no.8:3-34 '54. (MLRA 9:3)
(Strains and stresses) (Shot peening)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya.B.

FD 371

USSR/Physics - Stress Analysis, Strength of Solids

Card 1/1

Author : Sobolev, N. D. and Fridman, Ya. B.

Title : On the strength of bodies with variable mechanical properties

Periodical : Zhur. tekh. fiz. 24, 479-498, Mar 1954

Abstract : Stating that, despite considerable development of methods for strength increase by using materials with high mechanical properties and by changing shape and manufacturing technology of products, insufficient attention has been paid to coordination of influences of various factors on strength, authors present analysis and evaluation of necessary conformity between "field of resistances," which characterizes variable mechanical properties, and "field of reduced stresses," which reflects varying distribution of stresses. Only some of the simplest cases, such as tension, compression, bending and torsion of bar, have been considered; but authors claim that conclusions and assumptions of this work may be further developed and applied for other more complicated cases. Twenty six references, 25 USSR, 1943-1953. Tables, graphs.

Institution :

Submitted : October 13, 1953

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000513720011-1

FRIDMAN, Ya. B.

*On the Liability of Metals [Chromium-Nickel Alloys] to Failure under Prolonged Loading at Elevated Temperatures. Ya. B. Fridman and B. A. Drozdovsky (*Doklady Akad. Nauk* [illegible], (4), 793-796).—[In Russian]. Specimens of Cr-Ni alloys were subjected to static tension at 600° C., and the intervals of time up to the appearance of the first crack on the surface (failure of the element) and up to the breaking point (failure of the specimen) were determined. The alloy was studied in two forms: (1) having a fine cryst. structure obtained by quenching from 1050° C., and (2) having a coarse cryst. structure obtained by annealing for 20 min. at 1200° C. and cooling in air. The appearance and propagation of the intergranular cracks were studied under the microscope, and so-called "impairment curves" were constructed by plotting the tension under which the failures occurred on a time basis. It was found that the cracks appeared sooner in specimens of coarse crystal structure, but the failure of fine-grain specimens occurred in a shorter time. This phenomenon was attributed to the straight-line propagation of cracks in fine-grain specimens, and to the hindering effect of large grains situated in the path of propagation of cracks in a coarse-grain alloy. It was suggested that the resistance to formation of cracks should be used as another criterion of the high-temp. resistance of metals and alloys, as it may lead to a different classification than that on the basis of the time up to the breaking point.

—S. K. L.

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