RUB, M.G.; ZALISHCHAK, B.L.

Alkali intrusive rocks of the Maritime Territory. Izv. AN SSSR. Ser. geol. 29 no.10:80-102 O '64. (MIRA 17:11)

1. Institut geologii rudnykh mestorozhdeniy, petrografii, mineralogii i geokhimii AN SSSR, Moskva.

ZALISHCHAK, B.L.; KIZYURA, V.Ye.

Discovery of eudialyte in the Maritime Territory. Zap.Vses.min. ob-va 90 no.3:291-294 '61. (MIRA 14:10)

1. Dal'nevostochnyy geologicheskiy institut Dal'nevostochnogo filiala Sibirskogo otdeleniya AN SSSR, Vladivostok.
(Maritime Territory—Eudialyte)

PA 41/49T13

ZALISHKIN, M.D.

Feb 49

USSR/Electricity
Power Plants, Electric
Distributors

"Selection of an Efficient Type of 6 - 10 Kilowatt Distributor System for Power Plants and Substations," M. D. Zalishkin, Engr, 3 pp

"Elek Stants" No 2

Detailed discussion, referring to communication system and equipment with complete description of device. Gives three illustrations of construction plans.

41/49T13

1. ZAITT, A.: Eng.

2. USSR (600)

4. Baking

7. Changing the heating system for semi-automatic machines for making ice-cream waffles. Mol. prom, 12. no. 11. 1952.

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

ZALIT, A.

Solder and Soldering

Electric sealing machine, Mol. prom., 13, No. 7, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

ZALIT, A., Eng.

Dairying - Apparatus and Supplies

Milk bottle rack. Moloch. prom. 14, no. 3, 1953.

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

ZALIT, N. N. and V. V. VUL'F

Spravochnik po remontu parovozov. Izd. 2., ispr. i dopoln. Moskva, Transzheldorizdat, 1943. 471 p. diagrs.

(Handbook of locomotive repair.)

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

ZALIT, N. N.

Remont parovozov. Utverzhdeno v kachestve uchebnika dlia trekhgodichnykh shkol parovoznykh mashinistov. Moskva, Transzheldorizdat, 1951. 382 p. illus. (Uchebniki dlia mashinistov loklmotivov)

(Locomotive repair.)

DLC: TJ675.Z29

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

ZALIT, N. N.

Repairs of locomotives; text-book. Moskva, Gos. transp. Zhel-dor. izd-vo, 1952. 474 p. (53-29898)

ZALIT, N.N.

[illegible] ... for competition for Stalin Prizes for ... Moscow ... [illegible]

Podshivalov, B.A. Zalit, N.N.	"Repair of Steam Locomotives"	Ministry of Railways

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963710005-9"

ZALIT, Nikolay Nikolayevich, inzhener; ATRUSHKEVICH, A.G., inzhener, redaktor; VUL'F, V.V., inzhener, redaktor; VERINA, G.P., tekhnicheskiy redaktor

[Locomotive repairs] Remont parovozov. Izd. 3-e, isprav. i dop. Moskva, Gos. transportnoe zhel-dor. izd-vo, 1954. 531 p. (MIRA 8:7)
(Locomotives--Repairs)

ZALIT, N.N.

ALFEROV, A.A.; ARTEMKIN, A.A.; ASHKENAZI, Ye.A.; VINOGRADOV, G.P.; GAISYEV, A.U.; GRIGOR'YEV, A.N.; D'YACHENKO, P.Ye.; ZALIT, N.N.; ZAKHAROV, P.M.; ZOBNIN, N.P.; IVANOV, I.I.; IL'IN, I.P.; KMETIK, P.I.; KUDRYASHOV, A.T.; LAPSHIN, F.A.; MOLYARCHUK, V.S.; PERTSOVSKIY, L.M.; POGODIN, A.M.; RUDOY, M.L.; SAVIN, K.D.; SIMONOV, K.S.; SITKOVSKIY, I.P.; SITNIK, M.D.; TETEREV, B.K.; TSETYRKIN, I.Ye.; TSUKANOV, P.P.; SHADIKYAN, V.S.; ADELUNG, N.N., retsenzent; AFANAS'YEV, Ye.V. retsenzent; VLASOV, V.I., retsenzent; VOROB'YEV, I.Ye., retsenzent; VORONOV, N.M., retsenzent; GRITCHENKO, V.A., retsenzent; ZHEREBIN, M.N., retsenzent; IVLIYEV, I.V., retsenzent; KAPORTSEV, N.V., retsenzent; KOCHUROV, P.M., retsenzent; KRIVORUCHKO, N.Z., retsenzent; KUCHKO, A.P., retsenzent; LOBANOV, V.V., retsenzent; MOROZOV, A.S., retsenzent; ORLOV, S.P., retsenzent; PAVLUSHKOV, E.D., retsenzent; POPOV, A.N., retsenzent; PROKOF'YEV, P.F., retsenzent; RAKOV, V.A., retsenzent; SINEGUBOV, N.I., retsenzent; TERENIN, D.F., retsenzent; TIKHOMIROV, I.G., retsenzent; URBAN, I.V., retsenzent; FIALKOVSKIY, I.A., retsenzent; CHEPYZHEV, B.F., retsenzent; SHEBYAKIN, O.S., retsenzent, SHCHERBAKOV, P.D., retsenzent; GARNYK, V.A., redaktor; LOMAGIN, N.A. redaktor; MORDVINKIN, N.A., redaktor; NAUMOV, A.N., redaktor; POBEDIN, V.F., redaktor; RYAZANTSEV, B.S., redaktor; TVERSKOY, K.N., redaktor; CHEREVATYY, N.S., redaktor; ABSHINOV, I.M., redaktor; BABELYAN, V.B., redaktor; BERNGARD, K.A., redaktor; VERSHINSKIY, S.V., redaktor; GAMBURG, Ye.Yu., redaktor; DERIBAS, A.T., redaktor; DOMBROVSKIY, K.I., redaktor; KORNEYEV, A.I., redaktor; MIKHEYEV, A.P., redaktor

(Continued on next card)

ALFEROV, A.A. ---- (continued) Card 2.
MOSKVIN, G.N., redaktor; RUBINSHTEYN, S.A., redaktor; TSYPIN, G.S., redaktor; CHERNYAVSKIY, V.Ya., redaktor; CHERNYSHEV, V.I., redaktor; CHERNYSHEV, M.A., redaktor; SHADUR, L.A., redaktor; SHISHKIN, K.A., redaktor

[Railroad handbook] Spravochnaia knizhka zheleznodorozhnika. Izd. 3-e, ispr. i dop. Pod obshchei red. V.A.Garnyka. Moskva, Gos. transp.zhel-dor. izd-vo, 1956. 1103 p. (MLRA 9:10)

1. Nauchno-tekhnicheskoye obshchestvo zheleznodorozhnogo transporta. (Railroads)

ZA_IT, N.N.; KHITROV, P.A., tekhnicheskiy redaktor

[Regulations governing ordinary repairs of locomotives] Pravila srednego remonta parovozov. Moskva, Gos. transp.zhel-dor. izd-vo, 1957. 450 p. (MIRA 10:7)

1. Russia (1923- U.S.S.R.) Ministerstvo putey soobshcheniya. (Locomotives--Repairs)

ZALIT, Nikolay Nikolayevich,; VUL'F, Valentin Vasil'yevich,; ATRUSHKEVICH, A.G., inzh., red.; BOBROVA, E.N., tekhn. red.

[Handbook on repairing locomotives] Spravochnik po remontu parovozov. Izd. 4., perer. Moskva, Gos. transp. zhel-dor. izd-vo, 1958. 435 p. (MIRA 11:10)

(Locomotives--Maintenance and repair)

ZALIT, N.N., inzh.

Narrow-gauge locomotives. Torf. prom. 39 no.7:5-10 '62. (MIRA 16:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta Ministerstva putey soobshcheniya.
(Locomotives) (Railroads, Industrial)

ZALITE, K. Ya. In Latvian

ZALITE, K. Ya. -- "Theoretical Basis of the Sawing Process in the Technology of Wood Shapes." Latvian Agricultural Academy, 1948. In Latvian (Dissertation for the Degree of Candidate of Technical Sciences)

SO: Izvestiya Ak. Nauk Latviyskoy. SSR, No. 9, Sept., 1955

ZALITIS, L.

T

USSR/Human and Animal Physiology (Normal and Pathological). Body Temperature Regulation.

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79354.

Author : Zalitis, L.
Inst :
Title : Change of Reactiveness of the Skin and Its Hygenic Significance in the Process of Heat-Regulation In Milk Cows.

Orig Pub: Latv. lauksaimniecibas akad. raksti, Tr. Latv. s.-kh. akad., 1957, byp. 6, 273-279.

Abstract: No abstract.

Card : 1/1

ZALITIS, L. K.: Master Biol Sci (diss) -- "Evaluation of the results of dermoelectrometric and dermoreactivometric investigations of milch cows during the stable and pasture periods". Riga, 1958. 24 pp (Acad Sci Latvian SSR, Inst of Experimental Med), 220 copies (KL, No 5, 1959, 146)

TOLOK, A.A.; ZALITSHCHAK, B.L.; MATERIKOVA, A.M.

Micaceous-carbonate metasomatite in the Maykhe Basin of the Maritime Territory. Soob. DVFAN SSSR no.19:15-20 '63. (MIRA 17:9)

1. Dal'nevostochnyy geologicheskiy institut dal'nevostochnogo filiala Sibirskogo otdeleniya AN SSSR.

ZALIVADNYY, B.

Operation of an ionophone. Radio no.6:56 Je '60. (MIRA 13:7)
(Electroacoustics)

ZALIVADNYY, B., mladshiy nauchnyy sotrudnik

Instrument for measuring ship speed through the water. Mor. flot 21 no.2:18-20 F '61. (MIRA 14:6)

1. Gosudarstvennyy vsesoyuznyy dorozhnyy nauchno-issledovatel'skiy institut "Soyuzdornii."
(Speedometers)
(Ultrasonic waves--Industrial applications)
(Nautical instruments)

ZALIVADNYY, B.S.

Wide-band, vibrational rate microphone. Akust. zhur. 7 no.1:94-96 '61. (MIRA 14:4)

1. Kafedra akustiki Moskovskogo gosudarstvennogo universiteta
(Microphone)

20240
S/046/61/007/001/011/015
B104/B204

6,4311

AUTHOR: Zalivadnyy, B. S.

TITLE: Velocity broadband microphone

PERIODICAL: Akusticheskiy zhurnal, v. 7, no. 1, 1961, 94-96

TEXT: When a sound wave passes through an ion cloud which is produced in air, this ion cloud begins to vibrate. The vibration frequency of the ions will, if the ions are correspondingly heavy, be the same as the sound-particle velocity. The basic scheme of the microphone developed by the author, in which the vibrations of an ion cloud are used for purposes of measurement, is discussed on the basis of Fig. 1. Here, Э is a thermionic emitter which generates an ion cloud within the range of the collector grid K. If a sound wave passes through the ion current flowing to the collector K, this current is changed corresponding to the sound-particle velocity. Thus, an alternating current is generated on the resistor R_2, which is proportional to the sound-particle velocity. In the model designed by the author, the emitter consisted of a ceramic rod (6 mm long and 1.5 mm diameter), which was heated by means of a platinum heating conductor. The collector was made of brass

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20240

S/046/61/007/001/011/015
B104/B204

Velocity broadband microphone

(20.25 mm, wire distance 1 mm), the distance between emitter and collector was 6 mm. Emitter and collector net are fastened onto a ceramic head, and are protected by a cylindrical screen. The microphone described was checked by means of plane and standing waves. It was found that, with this instrument, the sound-particle velocity could actually be determined with great accuracy. The low sensitivity of about 10 watt·sec/cm, and the high noise level, as well as the bulky auxiliary equipment were considered to be grave disadvantages of this microphone. At present, the author is working on a similar microphone at which a tritium preparation is to be used as emitter. He expects to attain an improvement of the instrument. He thanks S. N. Rzhevkin and K. M. Ivanov-Shits for valuable advice, as well as M. N. Tsingarelli and B. A. Shilov for taking part in the experiments. There are 4 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Kafedra akustiki Moskovskogo gosudarstvennogo universiteta (Department of Acoustics of Moscow State University)

SUBMITTED: March 24, 1960

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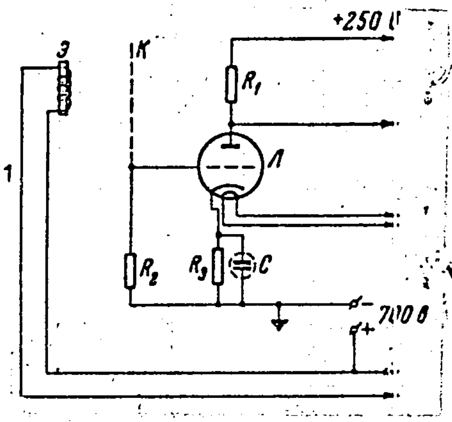
20240
S/046/61/007/001/011/015
B104/B204

Velocity broadband microphone

Fig. 1



Card 3/3

S/119/63/000/001/010/016
D201/D308

AUTHOR: Zalivadnyy, B.S.

TITLE: Ultrasonic meter for non-stationary flows

PERIODICAL: Priborostroyeniye, no. 1, 1963, 22-23

TEXT: This is a short description of the principle of operation and of performance of a universal flowmeter developed by the author. The principle of design is as follows: an ultrasonic generator and two receivers, tuned to the same frequency are pressed against the pipe carrying the liquid, on the outside the two receivers are to receive the same amount of ultrasonic energy and are differentially connected. The motion of the liquid results in the redistribution of the energy stream and, knowing the distance or inner diameter of tubing, the displacement of fluid can be determined. The instrument is stated to be simple in design and operation; can be applied to the measurement of flow of any homogeneous medium and allows for some changes of its physical properties during the operation. Experiments with an ultrasonic flowmeter having 1 mm thick

Card 1/2

S/119/63/000/001/010/016
D201/D308

Ultrasonic meter ...

X-cut plates in both generator and receivers, and resonating at 2.86 Mc/s (active area 1 cm^2), have shown that it is possible to measure velocities of the order of tenths of millimeters per second at a transmitter-receiver distance of 80 mm and a supply of 6 V. There is 1 figure.

Card 2/2

ZALIVADNYY, B.S., inzh.

Ultrasonic meter of unsteady flows. Priborostroenie no.1:22-23 Ja '63. (MIRA 16:2)

(Ultrasonic waves—Industrial applications)
(Flowmeters)

VIDINEYEV, Yu.D.; ZALIVADNYY, B.S.; KUZNETSOV, Yu.P.

Design of toothed rotary dynamometers. Priborostroenie no.12:7-8 D'63. (MIRA 17:5)

ZALIVADNYY, S. YA.

Nov 1947

USSR/Chemistry - Sodium Nitrate
Chemistry - Crystals - Twinning

"Effect of Mosaic on the Resistance of the Mechanical Twinning of Sodium Nitrate," R. I. Garber, S. Ya. Zalivadnyy, V. I. Startsev, Physicotechnical Institute, Academy of Sciences of the USSR, Khar'kov, 2pp

"Dok Ak Nauk" Vol LVIII, No 4, p 571-2

Process of twinning in both sodium nitrate and potassium nitrate crystals is very similar. Authors attempt to show that a further study of this process has resulted in the observation that some multicrystals of sodium nitrate show anomalies of great resistance to mechanical twinning. Submitted by Academician M. A. Leyontovich, 13 May 1947.

PA 38T10

ZALIVADNYY S Ya.

CA

Formation of slipping zones in monocrystals of sodium
nitrate. S. Ya. Zalivadnyi. *Doklady Akad. Nauk S.S.S.R.*
81, 1063-4(1951).—A study of the deformation of $NaNO_3$

monocrystals. The monocrystals were prepd. by crystn. of
$NaNO_3$ from melts, and the monocrystallinity was verified by
optical and x-ray methods. The orientation axis was detd.
by the plane of cleavage cracks and the double refraction.
Deformation was accomplished by compressing the crystals
in a press designed for the purpose. During deformation
the samples were observed by a polarizing microscope.
Samples were heated and cooled at a rate of 1° per min.
Along the direction of applied external forces the samples
were deformed at a rate of approx. 2 μ per sec. Photo-
graphs showing some of the slipping zones in monocrystals
of $NaNO_3$ are provided. Also, a schematic drawing of the
press in which the crystals were deformed is shown.

Gladys S. Macy

67670
SOV/126-8-6-18/24

18.7100

AUTHORS: Zalivadnyy, S.Ya. and Mikhaylovskiy, V.M.

TITLE: Influence of Cyclic Heat Treatment on Bicrystals of Uranium

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 6, pp 904-907 (USSR)

ABSTRACT: This study has been carried out in order to elucidate the influence of the interaction between crystals on the nature of changes in the material during cyclic heat treatment and to clarify further the mechanism of the phenomenon under investigation under simplified conditions (absence of surrounding grains). Prismatic billets with coarse columnar grains were prepared from technically pure uranium by a method described by Gerber et al (Ref 4). Bicrystal specimens were cut out by a wire saw from the billets. Further preparation of the specimens was carried out on polishing papers and by electrolytic polishing. The final specimens were 3.2 x 1.3 x 0.7 mm in dimension. The bicrystals were electrolytically etched and inspected in polarized light by a metallographic microscope. The relative grain orientation was determined by the X-ray method of inverse Laue exposure. In order to

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Influence of Cyclic Heat Treatment on Bicrystals of Uranium

control the relative displacement of grains graduation lines were applied perpendicular to the adjacent boundary. These lines were made with the diamond indenter of a micro-hardness tester. For the cyclic heat treatment the specimens were placed in an iron boat provided with a lid lined with tantalum foil in order to exclude interaction between uranium and iron. The specimens were heated by passing electric current through the boat and cooled by conducting away the heat through the massive copper grips of the boat which were water cooled. The temperature was measured by a Pt/Pt-Rh thermocouple welded to the boat. The experiments were carried out in vacuum at a pressure not exceeding 3×10^{-6} mm Hg and a temperature range of 100 to 600°C. The sequence was as follows: heating to the maximum temperature - 5 minutes, holding at 600°C for 1 minute, cooling to the minimum temperature - 4 minutes. The investigation was carried out up to 1000 cycles with intervals for the inspection of the specimens after 100, 200, 300, 400, 500 and 750 cycles. After 1000 cycles the specimens were subjected to electrolytic polishing and etching in order to expose the changes in microstructure.

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Influence of Cyclic Heat Treatment on Bicrystals of Uranium

In the table on p 905 results of the investigation of 3 specimens after 1000 cycles are given. Fig 1 is a photomicrograph of a portion of the specimen (a - original condition, polarized light, x 40; b - after 300 cycles, x 40; v - after 1000 cycles, x 40; g - the same after electrolytic polishing and etching, polarized light, x 160). Fig 2 shows graphically the dependence of the magnitude of displacement along the boundaries on the number of cycles for a bicrystal of uranium. Fig 3 is a photomicrograph of a uranium specimen without the middle portion (a - before cyclic heat treatment, polarized light; b - after 100 cycles). The authors arrive at the following conclusions:

1. The relative displacement of bicrystal grains per cycle under similar conditions of cyclic heat treatment coincides in the order of magnitude with the relative displacement of grains of approximately the same dimensions in polycrystalline specimens of uranium.

2. A change in the relative disposition of grains can take place due both to the difference in residual elongation and to the displacement of one grain as a whole

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Influence of Cyclic Heat Treatment on Bicrystals of Uranium

relative to another.
3. Experiments with bicrystals of uranium agree in their general features with the idea of the mechanism of irreversible changes in uranium in cyclic heat treatment, during which these changes are brought about by a combination of slip along the grain boundaries and plastic deformation within the grain bodies (see Ref 3), which has been established experimentally for polycrystalline uranium by Gerber et al (Ref 4). Gratitude is expressed to Professor R.I.Gerber for reading the paper and his valuable comments. There are 3 figures, 1 table and 5 references, 4 of which are Soviet and 1 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR (Physico-Technical Institute, AS UkrSSR)

SUBMITTED: May 27, 1959

Card 4/4

81616

S/181/60/002/06/04/050
B122/B063

21.1330
18.8100

AUTHORS: Garber, R. I., Zalivadnyy, S. Ya., Mikhaylovskiy, V. M.

TITLE: Change in the Microstructure of Uranium by Cyclic Heat Treatment 21

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 6, pp. 1052-1059

TEXT: When subjected to cyclic heat treatment, uranium exhibits irreversible growth which has been given different explanations in publications. In order to clarify this problem, the authors of the present paper examined the change in the microstructure of uranium, i.e., the process taking place inside and on the grain boundaries of polycrystalline uranium during cyclic heat treatment. The metal surface was examined microscopically and photographed with a camera of the type МФН-1 (MFN-1). Fig. 1 shows the scheme of the system. The uranium samples were prepared in such a way that coarse, columnar grains developed in the center of the sample (Fig. 2). The deformation of the grains was observed by the changes in etched lines. Sample No. 1 was

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81616

Change in the Microstructure of Uranium by Cyclic Heat Treatment

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B122/B063

heated 200 times from 100 to 600°C, No. 2 300 times, and No. 3 50 times in the course of 5 min, cooling took 4 min, the peak temperature lasted 1 min. Figs. 3-6 illustrate the changes undergone by the samples No. 1-3. A curvature in the etched lines and a mutual displacement of the grains was observed in all samples. In some cases, a distortion of the grain boundaries was observed in addition to the mutual displacement. It was further observed that at peak temperature there was a jump in the lines, which again vanished on cooling. The direction of these jumps changed after about 10 cycles, and remained the same on a further cyclic treatment. This thermoelastic deformation is assumed to be related with the anisotropic thermal expansion of uranium. The disorientation of the grains in the course of the cyclic treatment is examined roentgenographically. The greatest possible displacement of grains was determined from the degree of disorientation and the difference between the thermal expansion coefficients of touching bodies; the displacement corresponding to the mechanism of "thermal wedging" is likewise determined and compared with the displacement observed experimentally. The displacement observed was found to differ only little from the one determined by the

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Change in the Microstructure of Uranium by Cyclic Heat Treatment

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B122/B063

mechanism of "thermal wedging", whereas it is two orders smaller than the greatest possible, i.e., only a small part of the thermoelastic displacements becomes irreversible. It was further established by X-ray pictures (multiplication of the original spots on the single crystals) that a splitting of the grain takes place in blocks by cyclic thermal treatment. The residual displacement of grains, which ultimately causes the uranium growth, is ascribed to the formation of undersize grains, the plastic deformation in the boundary zone of weak grains, and the displacement of grains on their cooling. There are 8 figures, 1 table, and 11 references: 7 Soviet and 1 British.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR, Khar'kov (Physicotechnical Institute of the AS UkrSSR, Khar'kov)

SUBMITTED: February 24, 1958

Card 3/3

18.8200
5.2100

68630

S/126/60/009/02/019/033
E032/E314

AUTHORS: Garber, R.I., Zalivadnyy, S.Ya. and Gorokhovatskiy, F.S.

TITLE: Determination of the Anisotropy in the Microhardness of Beryllium Crystals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 2, pp 274 - 278 (USSR)

ABSTRACT: The aim of the present work was to study the anisotropy in the microhardness of a single crystal of beryllium. The study was made on 99.4% pure monocrystalline beryllium. The crystallization was carried out at 10^{-6} mm Hg in the apparatus shown schematically in Figure 1, in which 1 is a beryllium oxide crucible which has a hemispherical bottom and conical side walls, 2 is the crucible cover, 3, 4, 5 and 6 are electrical heaters, 7 is a jacket, 8 and 9 are screens, 10 is a support, 11, 12, 13 are apertures for thermocouples and 14, 15, 16, 17 and 18 are leads for the electrical heaters. The temperature of the molten material was brought up to 1 400 °C (120 °C above the melting point of beryllium). It was held at that temperature for about one hour and then uniformly cooled from the bottom upwards.

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S/126/60/009/02/019/033
E032/E314

Determination of the Anisotropy in the Microhardness of Beryllium Crystals

The crystallized beryllium was then removed from the apparatus after being cooled down to room temperature. The specimens were worked into a spherical form and suitably polished and the microhardness was determined at the points indicated in Figure 2 (circles). The specimens were orientated with the aid of X-ray diffraction photographs which were also used to judge the quality of the specimens. The microhardness was then measured using the PMT-2 microhardness gauge with a load of 100 g. Typical polar diagrams are shown in Figures 4 and 5 which refer to the plane containing C_6 and the plane perpendicular to C_6, respectively. It is concluded that the microhardness diagram for beryllium is close to an ellipsoid of revolution about the sixfold axis, the ratio

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66630

S/126/60/009/02/019/033
E032/E314

Determination of the Anisotropy in the Microhardness of Beryllium Crystals

of the axes of the ellipsoid being 0.62 (217 kg/mm^2 and 350 kg/mm^2 perpendicular and along the C_6 axis).
There are 5 figures, 1 table and 3 references, 1 of which is German, 1 Soviet and 1 English.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR (Physico-technical Institute of the Ac.Sc. Ukrainian SSR)

SUBMITTED: April 2, 1959

Card 3/3

24477

S/126/61/011/006/003/011
E193/E483

21.2100

AUTHORS: Garber, R.I., Zalivadnyy, B.Ya. and Mikhaylovskiy, V.M.

TITLE: Variation of the microstructure of uranium during cyclic thermal treatment. II

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.6, pp.889-892

TEXT: This is a continuation of earlier published work of the authors (Ref.1: FTT, 1960, 2, 6, 1052 and Ref.2: FMM, 1959, 8, 904) relating to the mechanism of distortion of uranium during thermal cycling on bi-crystal specimens and on coarsely crystalline material with columnar grains. In this paper the authors investigate the laws governing the thermal cycling-induced changes in finely-crystalline technical grade uranium. To ensure uniform grain-size of the required magnitude, cylindrical uranium specimens (60 mm long, 8 mm in diameter) were annealed and then compressed (in the direction normal to the axis) to approximately 50% reduction in thickness and the resultant blanks were machined to produce prismatic specimens measuring 60 x 4 x 3 mm. After recrystallization, these specimens were plastically deformed in

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APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963710005-9"

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S/126/61/011/006/003/011
E193/E483

Variation of the microstructure ...

compression (8% reduction in thickness) in the direction normal to the longitudinal axis and to the direction of the first compressing operation; this was done to develop texture in the material studied. The specimens were then cut into several prismatic test pieces which, after polishing (mechanical and electrolytic) and recrystallization, measured 6 x 2.5 x 1.5 mm. On 3 faces of each test piece a set of lines, spaced at 0.1 mm intervals, was inscribed by making scratches 2 μ wide and 0.5 μ deep. Annealing, recrystallization and the thermal cycling tests were all carried out in vacuum of 5×10^{-6} mm Hg. Each thermal cycle consisted of the following: heating to 600°C in 5 minutes; holding at 600°C for 1 minute; cooling to 100°C in 4 minutes. The specimens (whose original grain size was 25 μ) were examined after 200, 400, 600, 800, 1300 and 2000 cycles. The dimensional changes of several test pieces after 600 cycles are tabulated. It will be seen that the length of the test pieces increased, their width and thickness decreased. Metallographic examination revealed that thermal cycling had brought about both the deformation in the interior of the grains and relative displacement of the grains. The latter effect was reflected in increased roughness of the

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E193/E483

Variation of the microstructure ...

surface of the test pieces. This is illustrated in Fig.3 showing (x200 and x200 $\sqrt{2}$ in the horizontal and vertical direction, respectively) the contour of the surface of a specimen (a) before thermal cycling, (б) after 600 cycles and (в) after 2000 cycles. The average grain-size of the specimens decreased from the initial 25 μ to 18 μ after 2000 cycles. The rate of increase in the length of the test pieces increased with the increasing number of the cycles, $\Delta l/l$ per 1 cycle after 2000 cycles being 2 to 3 times larger than that after 600 cycles. After 2000 cycles the length of the test pieces increased on the average by 60%; at the same time the average increase in length of the grains was 20%. This discrepancy was attributed to the effect of recrystallization taking place during thermal cycling on the total elongation of the grains. There are 5 figures, 1 table and 4 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR (Physico-technical Institute AN UkrSSR)

SUBMITTED: September 27, 1960

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Variation of the microstructure ... S/126/61/011/006/003/011
E193/E483

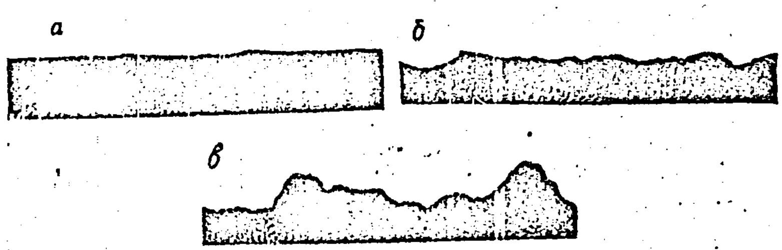

Fig.3.

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Variation of the microstructure ... E193/E483

Table.

1 - specimen No.
2 - length
3 - width
3 - thickness
4 - total
5 - per 1 cycle

(1) № образцов	(2) Длина		(3) Ширина		(4) Толщина	
	$\frac{\Delta l}{l}$, % (4) всего	$\frac{\Delta l}{l} \cdot 10^3$ (5) на 1 цикл	$\frac{\Delta l}{l}$, % (4) всего	$\frac{\Delta l}{l} \cdot 10^3$ (5) на 1 цикл	$\frac{\Delta l}{l}$, % (4) всего	$\frac{\Delta l}{l} \cdot 10^3$ (5) на 1 цикл
1	+7,0	+10	−3,0	−5	−5,5	−9
2	+9,5	+15	−4,0	−7	−4,0	−7
3	+9,0	+15	−3,0	−5	−3,0	−5
4	+7,5	+10	−3,5	−6	−1,5	−3
5	+7,0	+10	−1,5	−3	−3,0	−5
6	+4,0	+7	−3,0	−5	−1,5	−3

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S/126/63/015/001/011/029
E073/E420

AUTHORS: Zalivadnyy, S.Ya., Mikhaylovskiy, V.M., Malik, A.K.

TITLE: Simultaneous influence of cyclic heat treatment and an external tensile load on certain properties of polycrystalline zinc

PERIODICAL: Fizika metallov i metallovedeniye, v.15, no.1, 1963, 91-94

TEXT: From 99.96% pure zinc sheets, strips were cut in the direction of rolling, their surface was electrolytically cleaned, rolled to 55% at 50°C and annealed in a horizontal electric furnace at 90°C for 10 hours in air. This was done to retain the original preferential crystallographic orientation of the material. From these blanks, 50 mm long specimens with a gauge section of 36 x 3 x 2.5 mm were cut and ground by the spark-erosion method and then polished chemically and electrolytically. The obtained specimens were subjected to cyclic heat treatment in the temperature range 150 to 300°C, each cycle consisting of heating for 7 minutes in a vacuum of 10-2 mm Hg. for 5 minutes and cooling for 7 minutes in a vacuum of 10-2 mm Hg. Two groups of cyclic heat treatment were applied: 1) 400 cycles

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with a tensile stress of 100 g/mm^2; 2) 50 cycles with a tensile stress of 600 g/mm^2. Another batch of specimens was subjected to 1200 thermal cycles without any external load. The results are given in Table 1. Metallographic studies indicate that the elongation of the specimens was due primarily to slip in the grains; mutual displacement of grains and porosity are less important. No qualitative difference was observed in the behaviour of the specimens during simultaneous application of cyclic heat treatment and an external tensile load and cyclic heat treatment alone. There are 2 figures and 2 tables.

SUBMITTED: March 26, 1962

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963710005-9"

Table 1

Specimen No.	Treatment	Experiment duration, hours	Dimensional changes, %		
			Length	Width	Thickness
1	400 thermal cycles	80	+3.0	+2.0	-4.0
2	External load $\sigma = 100$ g/mm^2	80	+0.6	-0.3	-0.3
3	400 thermal cycles with an external load $\sigma = 100$ g/mm^2	80	+11.0	-0.5	-9.0
4	50 thermal cycles	10	+0.3	very small	very small
5	External load $\sigma = 600$ g/mm^2	10	+4.3	-1.8	-2.7
6	50 thermal cycles with an external load $\sigma = 600$ g/mm^2	10	+33	-8.5	-16

EWT(m)/EWA(d)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) IJP(c) JD/HW

stability during cyclic

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963710005-9"

Card 1/2

Samples subjected to normal treatment were less resistant to heating-cooling cy

Card 2/2

GARBER, R.I.; GINDIN, I.A.; ZALIVADNYY, S.Ya.; MIKHAYLOVSKIY, V.M.; MALIK, A.K.; NEKLYUDOV, I.M.

Effect of programmed hardening on creep of polycrystalline zinc and stability during cyclic heat treatment. Fiz. met. i metalloved. 18 no.6:904-908 D '64. (MIRA 18:3)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

ZALIVADNYY, V.S. (Sverdlovsk)

Photographic exhibition "Physics and life." Fiz. v shkole 21 no.2:104 Mr-Ap '61. (MIRA 14:8)
(Physics--Audio-visual aids)

ZALIVAKHA, Petr Il'ich, tokar' udarnik kommunisticheskogo truda, aktivnyy ratsionalizator, izobretatel'; CHMIL', L.N., red.

[We are reducing time spent for auxiliary operations; from work practices at the "Svet Shakhtera" Plant] Sokrashchaem vspomogatel'noe vremia; iz opyta raboty na zavode "Svet shakhtera." Khar'kov, Khar'kovskoe knizhnoe izd-vo, 1962. 43 p. (MIRA 17:3)

ZALIVAKHA, Petr Il'ich, aktivnyy ratsionalizator, izobretatel', tokar', udarnik komm. truda; CHMIL', L.N., red.; KOZINCHENKO, V.Ya., tekhn. red.

[We are reducing auxiliary time] Sokrashchaem vspomogatel'noe vremia; iz opyta raboty na zavode "Svet shakhtera." Khar'kov, Khar'kovskoe knizhnoe izd-vo, 1962. 43 p. (MIRA 16:7)

(Mining machinery—Technological innovations)

S/081/60/000/017/008/016
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 17, p. 75, # 68757

18

AUTHORS: Tyukina, M.N., Zalivalov, F.P., Tomashov, N.D.

TITLE: Electron-Microscopical Study of the Microstructure of Anodic Oxide Films on Aluminum

PERIODICAL: Tr. In-ta fiz. khimii, AN SSSR, 1959, No. 7, pp. 165-174

TEXT: The authors studied the effect of electrochemical conditions of obtaining anodic oxide films on Al upon their structure and physico-chemical properties. The Al surface was investigated after removal of the oxide film in hot solution of 35 ml/1 H_3PO_4, and 20 g/1 CrO_3. The surface of the oxide film and the transverse and longitudinal splits of the oxide film were also studied. A method is described of obtaining carbon imprints from anodic oxide film splits. It is shown that anodic oxide films on Al surfaces consist of close-packed cells in the form of hexagonal prisms, arranged with their base faces parallel to the anode surface. The cellular structure is formed within 3-7 sec after application of the anode current and does not change with a further growth of the oxide film

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A006/A001

Electron-Microscopical Study of the Microstructure of Anodic Oxide Films on Aluminum

thickness. The pore size in the oxide film increase linearly with an increase of the forming tension. It is shown that the particular properties of anodic oxide films (hardness, resistance against corrosion and wear) obtained by the method of hard anodizing, are explained by the increased size of oxide cells, forming the oxide film, due to the thickening of their walls.

Yu. Polukarov

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

PHASE I BOOK EXPLOITATION SOV/4271

Akademiya nauk SSSR. Institut fizicheskoy khimii

Issledovaniya po korrozii metallov. [vyp.] 5: Novyye metody i pribory dlya korrozionnykh ispytaniy (Investigations on Corrosion of Metals [No. 5]: New Methods and Instruments for Corrosion Testing) Moscow, Izd-vo AN SSSR, 1959. 176 p. (Series: Its: Trudy, vyp. 7) Errata slip inserted. 3,000 copies printed.

Resp. Ed.: N. D. Tomashov, Doctor of Chemistry, Professor; Ed. of Publishing House: N. G. Yegorov; Tech. Eds: O. A. Astaf'yeva and Ye. V. Zelenkova; Editorial Board: N. D. Tomashov, A. V. Byalobzheskiy, Candidate of Chemistry, and P. V. Shchigolev, Candidate of Chemistry.

PURPOSE: This collection of articles is intended for scientific workers at research institutes and technical personnel of plant laboratories.

COVERAGE: The articles included in this collection deal basically with methods of corrosion investigation which have not yet been published in Soviet periodical literature but are of definite interest for studying corrosion processes. A wide range of problems is covered. In addition to the methods discussed the articles provide some experimental data which make possible full utilization of each individual method. No personalities are mentioned. References accompany each article.

Investigations on Corrosion (Cont.) SOV/4271

Babakov, V.S., Ye.N. Paleolog, and N. D. Tomashov. Adsorption Method for Determining the Porosity of Electroplating Coatings 159

Tyukina, M.N., F.P. Zalivalov, and N.D. Tomashov. Electron-Microscope Investigation of the Microstructure of Anodic Oxidation Films on Aluminum 165

AVAILABLE: Library of Congress

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VK/pw/fal
9-30-60

ZALIVALOV, F.P.

9 (6)

AUTHORS: Zalivalov, F. P., Tyukina, M. N., Tomashov, N. D. SOV/32-25-6-17/53

TITLE: Investigation of the Microstructure of Anodic Oxide Films on Aluminum by the Aid of the Electron Microscope (Issledovaniye mikrostruktury anodnykh okisnykh plenok na alyuminii pri pomoshchi elektronnogo mikroskopa)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 6, pp 696-698 (USSR)

ABSTRACT: A method was devised, permitting the determination of the cell structure of anodic oxide films on aluminum (Fig 1). By this method no impression is taken of the film on the metallic anode surface (Ref 1); instead, replicas are prepared of such films. The method is based on the operation of taking off and subsequently comminuting the oxide film, thus obtaining microscopic particles which are split along the side- (longitudinal section) or bottom- (cross section) plane of the hexagon lattice structure. Reproductions of these planes of shear may be obtained by the carbon-replica method (Ref 2). The preparation procedure is described. Observations were made with the electron microscope EM-3 or UEM-100, and the samples under investigation were of AV000 aluminum (99.99 % Al), which

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963710005-9"

Investigation of the Microstructure of Anodic Oxide Films on Aluminum by the Aid of the Electron Microscope SOV/32-25-6-17/53

were oxidized anodically in a 4 % sulphuric acid solution by the method of the hard anodization (Refs 3, 4) (Figs 2, 3). The figures show that the oxide film is a dense packing of cells in the form of hexagon prisms. Data are supplied of the dimension and quantity of cells (Table); they agree with data obtained with an earlier described method (Ref 1). There are 3 figures, 1 table, and 4 references, 2 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

Card 2/2

28 (5)

AUTHORS: Tomashov, N. D., Byalobzheskiy, A. V., Val'kov, V. D., Zalivalov, F. P. SOV/32-25-6-31/53

TITLE: Device for the Rapid Determination of the Quality of Anodic Oxide Films on Aluminum and Its Alloys (Pribor dlya bystrogo opredeleniya kachestva anodnykh okisnykh plenok na alyuminii i yego splavakh)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 6, pp 738-739 (USSR)

ABSTRACT: For the detection of defective parts of anodic films the device K-1 by G. V. Akimov and Ye. N. Paleolog is usually used. The device permits the detection of very small defects, does, however, not indicate the general quality of the film; another disadvantage is the use of a sodium chloride solution which may lead to a corrosion of the film. Therefore, a new device was designed, K-2 - very similar to K-1; the mode of operation of the new device is based upon the fact that the conductivity of the anodic oxide film is the greater the more porous it is. The construction of the detector of defects (Fig 1) is somewhat modified, stainless steel 1 Kh18N9 or zink serve e. g. as electrode as copper and aluminum may together form an electric cell. The device

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Device for the Rapid Determination of the Quality of Anodic Oxide Films on Aluminum and Its Alloys SOV/32-25-6-31/53

(Fig 2, Scheme) has piles as direct-current transmitters (2-4 v) so that a non corroding electrolyte may be used (0.1 % solution of potassium- or sodium bichromate). There are 2 figures.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

Card 2/2

S/128/61/000/012/001/004
A004/A127

AUTHORS: Zalivalov, F.P.; Tyukina, M.N.; Ignatov, N.N.

TITLE: Deep anodizing of aluminum chill molds

PERIODICAL: Liteynoye proizvodstvo, no. 12, 1961, 11

TEXT: Referring to former works (Ref. 1: N.D. Tomashov, "Vestnik inzhenerov i tekhnikov", no. 2, Moscow, 1946; Ref. 2: N.D. Tomashov, M.N. Tyukina, "Issledovaniya po korrozii metallov", no. 1, Trudy Instituta fizicheskoy khimii, AN SSSR, no. 2, izd-vo AN SSSR, Moscow 1951; Ref. 3: N.D. Tomashov, A.V. Byalobzheskiy, "Issledovaniya po korroziimetallov", no. 4, Trudy Instituta fizicheskoy khimii AN SSSR, no. 5, Izd-vo AN SSSR, Moscow - Leningrad, 1955) the author points out that deep anodizing produces on the surface of aluminum and its alloys a hard oxide coat which possesses a considerable resistance to high temperatures. The low heat conductivity of anode coats (0.001 - 0.003 cal/cm · · sec °C) of at least 150 - 300 μ thickness limits the heat transfer to the mold metal and prevents its melting. This property of the aluminum oxide coat was utilized in the manufacture of molds for the casting of h-f aluminum and magnesium alloys. The mold was made of pure AB000 (AV000) aluminum (99.99%)

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Deep anodizing of aluminum chill molds

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and АВО (AVO) commercial aluminum. The inner mold surface was coated with a thick oxide layer obtained in a 2N-solution of sulfuric acid at a constant current density of 2.5 amp/dm^2 and an electrolyte temperature of 0 - 3°C. The surfaces not being anodized were covered with АК-20 (AK-20) nitro lacquer. The anodizing time was 3 h, the obtained coat was 150 - 180 μ thick. Ingots of six aluminum alloys with copper (3 - 8% Cu) and four magnesium alloys with zinc (3 - 5% Zn) were cast in the molds, the maximum alloy temperature prior to casting being 720 - 740°C. The alloys were melted under a flux, which, for the aluminum alloys consisted of 55% KCl and 45% NaCl, for the magnesium alloys of 54% KCl and 46% LiCl. After the casting of these 10 ingots the anode coat remained completely intact while its hardness even increased somewhat due to dehydration. The walls of aluminum molds should be thicker than those of iron molds. The use of additional external cooling makes it possible to use aluminum chill molds also for metals with higher melting points. There are 1 figure and 4 Soviet-bloc references.

Card 2/2

ZALIVALOV, F.P.; TYUKINA, M.N.; IGNATOV, N.N.

Deep anodizing of aluminum molds. Lit. proizv. no.12:11 D '61.
(MIRA 14:12)

(Molding (Founding))
(Aluminum coating)

TOMASHOV, N.D.; ZALIVALOV, F.P.

Effect of the structure of thick-layered oxide films on their properties. Zhur.prikl.khim. 34 no.8:1799-1907 Ag '61.
(MIRA 14:8)

1. Institut fisicheskoy chimii AN SSSR.
(Metallic films)
(Alluminum alloys)

22003
S/076/61/035/004/019/018
B106/B201

18.7400 also 1045, 1208, 1087

AUTHORS: Zalivalov, F. P., Tyukina, M. N., and Tomashov, N. D.

TITLE: Effect of conditions of electrolysis upon the formation and growth of anodic oxide coatings on aluminum

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 4, 1961, 879 - 886

TEXT: A study has been made of the microstructure of anodic oxide coatings on aluminum with the aid of an ЭМ-3 (EM-3) electron microscope. The coatings were obtained in sulphuric medium by the method of hard anodizing. This special procedure, which has been developed at the authors' institute (Ref. 4: N. D. Tomashov, Vestn. inzh. i tekhn., no. 2, 59, 1946; Ref. 5: N. D. Tomashov, M. N. Tyukina, Issledovaniya po korrozii metallov (Tr. In-ta fiz. khimii AN SSSR) vyp. II, No. 1, Izd-vo AN SSSR, M., 1951), ensures an efficient protection of the surface of aluminum alloys not only from corrosion, but also from wear by friction and other erosive actions. The coatings are thermally stable, and provide an insulation against heat and electric current. A УЭМ-3 (UEM-3) electron

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Effect of conditions of ...

microscope was also used for certain examinations. The pictures were obtained in enlargements of 8000 to 12000. A maximum 60000-fold enlargement was obtained by further photographic enlargement. The specimens consisted of A8 000 (AV000) aluminum (99.99% Al) and were 15×15×2 mm in size. Prior to anodizing, the specimens were ground, polished with a fine aluminum oxide suspension, and degreased. The anodic oxidation took place in 4 N sulfuric acid at 0.5°C and at current densities of 25, 50, and 100 ma/cm^2, or initial voltages of 22, 25, and 27 v. The duration of oxidation was varied between a few seconds and 120 minutes. The microstructures of very thin and very thick coatings could thus be intercompared. During oxidation the electrolyte was vigorously intermixed in order to obtain more homogeneous coatings. The diameter of the pores of the coatings that were obtained was determined with the electron microscope. The number of pores per unit area of coating was established from the quantity of oxide cells per unit area. The very thin coatings (δ = 0.05-0.08μ) obtained in the initial stage of anodic oxidation were examined directly in the electron microscope after being detached from the aluminum surface in a sublimate solution. A copy was prepared of the thick coatings (δ =50-100μ) resulting from longer anodizing under the

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same conditions. For this purpose, a very thin layer of collodion or quartz was applied to the surface of oxidized aluminum, which took up the relief of the oxide coating concerned. This copy was studied in the electron microscope. Results: The coatings submitted to investigation are no dense oxide layers irregularly traversed by channel-shaped pores, but constitute dense packings of cells in the form of hexagonal prisms resting normally to the metal surface, and connected to one another at the side faces. These results were compared with the structures of coatings obtained under usual conditions of anodic oxidation in sulfuric acid. For this purpose, aluminum specimens were anodically oxidized at 20°C and a current density of 10 ma/cm^2, and an initial voltage of 10 v. The mean diameter of the pores in the coatings was found to be independent of the method of anodizing in sulfuric acid, and to amount to 120 A. It was established on the other hand that coatings produced by the above described method of hard anodizing exhibit basically new properties. They display a great hardness and stability against wear by friction. These improved properties are based upon an enlargement of oxide cell dimensions (by a thickening of the walls) and upon the reduction of the number of pores per unit area of the coating. The scientific workers of the

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Effect of conditions of ...

laboratory for sorption processes at the authors' institute are thanked for their assistance, V. M. Luk'yanovich and Ye. A. Leont'yev for valuable advice. There are 8 figures, 1 table, and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English language publication reads as follows: F. Keller, M. S. Hunter, D. Z. Robinson, J. Electrochem. Soc., 100, 411, 1953.

ASSOCIATION: Akademiya nauk SSSR Institut fizicheskoy khimii (Academy of Sciences USSR Institute of Physical Chemistry)

SUBMITTED: July 24, 1959

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22003

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Effect of conditions of ...

Fig. 3: Distribution curves of pores according to diameters, as obtained for thin (δ =0.08 μ) coatings by the electron microscope (after detaching films from aluminum surface in sublimate solution).
1) hard anodizing (i=25 ma/cm^2, E = 22 V, t = 0.5^o);
2) ordinary anodizing (i = 10 ma/cm^2, E = 10 V, t = 20^{o}C);
(a) pore diameter in A.

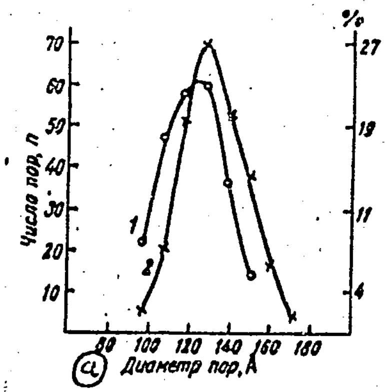

FIG 3

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36059
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A057/A126

1.1800

AUTHORS: Zalivalov, F.P., Tyukina, M.N., Tomashov, N.D.

TITLE: Properties and microstructure of thick layers of anodic films on aluminum

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleyeva, v. 7, no. 2, 1962, 235 - 236

TEXT: The effect of the conditions of electrolysis in sulfuric acid on microstructure characteristics of anodic layers was demonstrated in earlier papers. The effect of the microstructure of anodic layers on their properties is investigated in the present work. Electrodes of AB000 (AV 000) aluminum containing 99.99% Al were used and anodic oxidation was carried out in 4 N H_2SO_4, according to a method of the present institute. These conditions allowed the preparation of layers with different, but exactly defined structures. It was observed that an increase of the oxide cell of structure (distance between two parallel planes of the cell, which increases with current density) also increases the micro-hardness and strength of the anodic layer. Thus with an increase of aluminum oxide cell from 280 Å to 547 Å micro-hardness increased from 350 to 600 kg/mm^2.

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Since the diameter of the pores remains constant and the increase of the cell is effected by an increase of the thickness of the walls, the rise in micro-hardness and endurance is easily to explain. Therefore, in the manufacture of anodic coatings with high mechanical properties, electrolytic conditions must be applied which allow formation of coarse structure cells. No protection can be effected by the aluminum oxide layer in media which dissolve the oxide. In these media the layer between metal and oxide film protects the metal. The thickness of this barrier layer was determined by a method described by N. Vernik and R. Pinner. Chemical resistance of the anodic layer increases with the thickness of the barrier layer, since the latter prevents the penetration of agressive ions through pores of the aluminum oxide film. Thus an increasing of the barrier layer from 102 Å to 266 Å increases more than twice the time necessary for the penetration of agressive ions. There are 2 figures and 4 references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: May 14, 1961

TYUKINA, M.N.; IGNATOV, N.N.; ZALIVALOV, F.P.; TOMASHOV, N.D.

Anodic oxidation of aluminum-copper alloys in sulfuric acid. Zhur.prikl. khim. 36 no.2:338-344 F '63. (MIRA 16:3)
(Aluminum-copper alloys) (Oxidation, Electrolytic)

L 17760-63 ECS(/1/EWT(m)/EWP(j)/EWP(n)/BDS AFFTC/ASD/ESD-3 Pc-4 RM S/0080/63/036/007/1503/1506

AUTHORS: Shih Ch'in-min; Zalivalov, F. P.; Tomashov, N. D.

TITLE: The effect of the temperature of an electrolyte on the properties and microstructure of thick-layer anode films

SOURCE: Zhurnal prikladnoy khimii, v. 36, no. 7, 1963, 1503-1506

TOPIC TAGS: Anodizing, thick-layer anode film, aluminum, electrolyte temperature

ABSTRACT: Disks of AD00/aluminum (99.9 Al), 32 mm in diameter and 2.5 mm thick, were used in temperature tests under conditions simulating practical operations. One side of the disk was anodized, the other coated with AK-20 varnish. Before anodizing, the samples were polished, rubbed with alcohol, dipped in a 10% NaOH solution for 1 min, and clarified in a 30% HNO sub 3 solution for 3 min. Anodic oxidation was carried out in a 4 N H sub 2 SO sub 4 solution a a current density of 2.5 A/sq decimeters for 60 min, yielding a film thickness of ca. 60 micra. Electrolyte temperatures compared were -5, 0, +5, and 10C. The weight, thickness, and hardness of the thick-layer anode films decreased with increasing electrolyte temperatures, but their porosity increased. Increasing the temperature also affected the microstructure of the films, increasing the number of nuclei of

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ACCESSION NR: AP3006181

oxidation and hence pores by decreasing their transverse dimensions. Film [illegible] conditions [illegible] [illegible] sulfuric acid had the best properties: minimal porosity (5.5%) and maximal hardness (560 kg/sq. mm). Orig. art. has: 4 figures, 1 table.

ASSOCIATION: None

SUBMITTED: 22Jan62 DATE ACQ: 25Sep63 ENCL: 00

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

L 10385-65 EWG(j)/EWT(m)/EPF(c)/EPR/EWP(b) Pr-4/Ps-4 MJW/JD/WB/MLK

[illegible] 64.[illegible]

[illegible]

[illegible] anod[illegible] of aluminum [illegible] its alloys

[illegible] konferentsiya po zashchite metallov ot [illegible], [illegible], 1961. [illegible] zashchita metallov (Anodic protection of metals); doklady konferentsii. Moscow, Izd-vo [illegible], 1964, [illegible]

[illegible] aluminum, aluminum copper alloy, D 16 alloy, aluminum [illegible], [illegible] aluminum oxide film, thick oxide film structure, thick oxide film property

ABSTRACT: [illegible] investigation showed that thick oxide films formed on [illegible] aluminum and aluminum alloys consist of closely

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ACCESSION NR: AT4040073

position and structure of the alloy being anodized. At the content of

heterogeneous alloys. The

transmitted from the alloy to the

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[illegible]

[illegible] the best protective properties [illegible] various [illegible] elements (particularly Cu, Si, Fe, and Mg) improve the mechanical properties of [illegible] but [illegible] chemical and mechanical properties of the oxide films. The film quality can be significantly improved by the superimposition of the alternating current on the di- [illegible] figures and [illegible]

SUBMITTED: [illegible] ATD PRESS: 3110 ENCL: 00

[illegible]

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L 1652-66 EWT(m)/EPF(c)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) IJP(c) BW/JD/HW/DJ

ACCESSION NR: AP5021583 UR/0286/65/000/013/0055/0055
665.5

AUTHOR: Veyler, S. Ya.; Petrova, N. V.; Zalivalov, F. P.; Likhtman, V. I.; Tomashov, N. D.

TITLE: Method for applying lubricating film. Class 23, No. 172445

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 55

TOPIC TAGS: lubrication, film lubrication, solid lubricant

ABSTRACT: This Author Certificate introduces a method for hot working aluminum and its alloys in which the anodized layer serves as the lubricant. [AB]

ASSOCIATION: none

SUBMITTED: 16Jul62 ENCL: 00 SUB CODE: IE, MM

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4093

Card 1/1

L 28533-66 EWT(m)/EWA(d)/EWP(t)/ETI IJP(c) JH/JD/HB/GD

ACC NR: AT6013799 (N) SOURCE CODE: UR/0000/65/000/000/0200/0207

AUTHOR: Tomashov, N. D.; Zalivalov, F. P.

ORG: none

TITLE: Investigation of the barrier layer of thick anodic films on aluminum

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2 Moscow, Izd-vo Metallurgiya, 1965, 200-207

TOPIC TAGS: loop oscillograph, anodization, aluminum, oxide formation, corrosion, dielectric breakdown, surface film/MPP-2 loop oscillograph, AV000 extra-pure Al

ABSTRACT: Considering the widespread use of the method of thick-film anodizing and the definite effect of the barrier layer on such properties of porous anodic films as corrosion resistance and resistance to dielectric breakdown, the authors investigate the thickness of the barrier layer as a function of applied voltage, temperature, electrolyte concentration and anodizing time. The tests were performed on specimens (20x20x2 mm) of AV000 extra-pure cast aluminum (99.99% Al), anodically oxidized in sulfatic electrolyte. The thickness of the barrier layer was determined by the technique suggested by Hunter and Fowle (J. Electrochem. Soc., 1954, 101, 9, 481; 10, 514). Findings: the thickness of the barrier layer increases linearly with the

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L 28533-66

ACC NR: AT6013799

voltage applied (at the rate of somewhat more than 10 Å/v and decreases with increasing electrolyte temperature (owing to the attendant increase in the dissolving power of the electrolyte); it also decreases with increasing H_2SO_4 concentration (from 2N to 8N), though not as steeply as with increasing temperature. As for the effect of anodizing time on barrier-layer thickness, this thickness changes only during the first few seconds, when the curve passes through a peak, whereupon it remains constant even for films whose anodizing time lasts for 15 min and longer. Curves plotted with the aid of an MPP-2 loop oscillograph show that the increase in barrier-layer thickness is accompanied by an increase in terminal voltage, as confirmed by measurements of ohmic resistance, which increases from 10 to 18 ohm-cm when the layer thickness increases from 50 to 300 Å; as in the case of the effect of anodizing time, however, this increase soon passes through its peak and steadies out owing to the onset of the formation of the porous structure -- since the increase in current intensity enhances the aggressive effect of the acid (the ohmic resistance of the oxide film decreases in the pores). Hence, the following theory may be offered: the first pores in the oxide film arise at some defective spots, e.g. cracks or at the crystallite boundaries. The growth of the pore at the outer part of the barrier film is accompanied, at the film-metal interface, by the growth of a new layer of oxide whose individual cells are shaped like a semisphere whose convex side faces the metal. During the first few seconds of anodizing, when the peak thickness

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ACC NR: AT6013799

voltage applied (at the rate of somewhat more than 10 Å/v and decreases with increasing electrolyte temperature (owing to the attendant increase in the dissolving power of the electrolyte); it also decreases with increasing H_2SO_4 concentration (from 2N to 8N), though not as steeply as with increasing temperature. As for the effect of anodizing time on barrier-layer thickness, this thickness changes only during the first few seconds, when the curve passes through a peak, whereupon it remains constant even for films whose anodizing time lasts for 15 min and longer. Curves plotted with the aid of an MPP-2 loop oscillograph show that the increase in barrier-layer thickness is accompanied by an increase in terminal voltage, as confirmed by measurements of ohmic resistance, which increases from 10 to 18 ohm-cm when the layer thickness increases from 50 to 300 Å; as in the case of the effect of anodizing time, however, this increase soon passes through its peak and steadies out owing to the onset of the formation of the porous structure -- since the increase in current intensity enhances the aggressive effect of the acid (the ohmic resistance of the oxide film decreases in the pores). Hence, the following theory may be offered: the first pores in the oxide film arise at some defective spots, e.g. cracks or at the crystallite boundaries. The growth of the pore at the outer part of the barrier film is accompanied, at the film-metal interface, by the growth of a new layer of oxide whose individual cells are shaped like a semisphere whose convex side faces the metal. During the first few seconds of anodizing, when the peak thickness

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ACC NR: AT6013799

of the barrier layer is reached, the entire surface of the barrier layer gets covered by the pores, with the attendant growth of oxide cells representing the "building blocks" of porous anodic films. In the course of film growth the electrolyte reaches the barrier layer via the pores, thus leading to the formation of new layers of oxide. Thus, it may be assumed that the porous layer of the anodic oxide film, whatever its thickness, grows above the barrier film and from the barrier film. Orig. art. has: 7 figures, 1 table

SUB CODE: [illegible]11, /07[illegible], [illegible]/ SUBM DATE: 19Jul65/ ORIG REF: 013/ OTH REF: 003

Card 3/3

L 28535-66 EWT(m)/EWP(t)/ETI IJP(c) JH/JD/WB/GD

ACC NR: AT6013797 (N) SOURCE CODE: UR/0000/65/000/000/0180/0190

AUTHOR: Tomashov, N. D.; Zalivalov, F. P.

ORG: none

TITLE: Formation and growth of anodic oxide films on aluminum alloys

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2. Moscow, Izd-vo Metallurgiya, 1965, 180-190

TOPIC TAGS: anodization, aluminum base alloy, intermetallic compound, electric potential, corrosion

ABSTRACT: Considering that the anodizing of alloys with a substantial content of alloy components involves special difficulties and, on the other hand, the anodic oxidation of homogeneously structured Al alloys has been fairly well investigated, this study deals with the anodic oxidation of heterogeneous Al alloys. To this end, the authors melted special binary alloys (15% Mn, 35% Si, 12% Fe, 46% Cu, 45% Mg, 55% Zn) in which the intermetallic compounds represented large crystals with surface area of from 1 to 2-3 mm^2. Voltage-time curves were plotted for the overall surface of the alloy as well as for the individual components of the alloy -- the eutectic and crystal. In addition, the alloy potential before and after anodic oxidation was measured with respect to a Hg_2SO_4 reference electrode. The anodizing was performed in 4N H_2SO_4 at 25°C (current density 1 a/dm^2, anodizing time 5 sec and 20 min). It is

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L 28535-66

ACC NR: AT6013797

found that, in the process of anodizing, such alloy components as crystals of Si and $MnAl_6$ get covered with a thin oxide film and pass into anodic film. As for $FeAl_3$ and $CuAl_3$ crystals, during anodizing they may either completely dissolve or pass into anodic film depending on the location of crystals in the alloy and their size; smaller crystals, as well as crystals present at the alloy surface are most prone to dissolve, while larger crystals not present directly at the alloy surface at the onset of anodizing pass into the anodic film. By contrast, the anodizing of Al-Mg and Al-Zn alloys leads to an intensive dissolution of their intermetallic components as evidenced by the fact that the potential of the Al-Mg and Al-Zn alloys returns to its original value immediately after the anodic current is disconnected. Thus, every individual Al alloy displays special features of its own depending on the nature of its structural components; on this basis, three groups of Al alloys may be distinguished as regards the effect of anodic oxidation: the first group includes alloys with Mn and Si, for which the voltage increases sharply and the structural components ($MnAl_6$ and Si crystals) get covered with a thin dense oxide film; the second group includes alloys with Fe and Cu, whose intermetallic compounds are insufficiently protected against corrosion even when covered by an oxide film; and the third group includes alloys with Mg and Zn, which completely lack a protective oxide film and so are highly corrosion-prone. Orig. art. has: 6 figures and 1 table.

SUB CODE: 11, 07, 20/ SUBM DATE: 19Jul65/ ORIG REF: 004/

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L 28534-66 EWT(m)/EWP(t)/ETI IJP(c) JH/JD/WB/GD

ACC NR: AT6013798 (N) SOURCE CODE: UR/0000/65/000/000/0191/0199

AUTHOR: Tomashov, N. D.; Zalivalov, F. P.

ORG: none

TITLE: Electric insulation properties of thick anodic oxide films on aluminum and its alloys

SOURCE: Korroziya metallov i splavov (Corrosion of metals and alloys), no. 2 Moscow, Izd-vo Metallurgiya, 1965, 191-199

TOPIC TAGS: test rig, electric insulation, dielectric breakdown, oxide formation, anodic oxidation, anodization/UPU-1 test rig, AMts aluminum alloy

ABSTRACT: The article deals with the effect of certain factors (the composition of Al alloys, the density of anodic current, preheating of the film, and nature of disruptive current) on the breakdown voltage U_{breakd} of thick (33-75 μ) anode films. The tests were performed at room temperature with the aid of a specially developed device (Fig. 1) attached to a standard UPU-1 test rig for determining dielectric strength with the aid of direct and alternating currents (output voltage limits: 0-1, 0-3 and 0-10 kv). Findings: the thick anodic oxide films produced on Al and its

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ACC NR: AT6013798

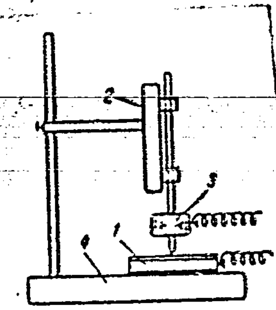

Fig. 1. Device for electric contacting with the surface of the anodic film:

1 - specimen with anodic film and electric contact; 2 - plexiglas probe holder; 3 - counterweight on brass probe with electric contact; 4 - plexiglas rack base

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ACC NR: AT6013798

alloys display high electric insulating properties. In certain cases the breakdown voltage of these may reach 2000-2500 v. Generally, the breakdown voltage varies with every type of alloy. Thus, for all plastically worked alloys (except Duraluminum and AMts) the absolute values of U_{breakd} exceed 1000 v in the presence of 40-70 μ thick films, whereas U_{breakd} for cast Al alloys (on which the films obtained are 50-65 μ thick) barely exceed 500 v, i.e. are about one-half as high. The markedly lower values of U_{breakd} recorded for cast alloys, as opposed to homogeneous plastically worked alloys, may be attributed to the presence in the anodic film of Si crystals (since cast Al alloys contain larger amounts of Si) which, during anodizing, pass from the alloy to the film. U_{breakd} is also affected by the geometry of the specimen: on convex surfaces U_{breakd} is higher than on concave surfaces; this is due to the cracks on the film surface, which are greater on a concave surface than on a convex one. Likewise, U_{breakd} also increases with increasing preheating temperature of the film. The use of AC in breakdown tests also reduces the electric insulating properties of the films. The decisive factor affecting U_{breakd} of the film is its thickness and structure: U_{breakd} increases with film thickness; the anodizing conditions (electrolyte composition, density and nature of current) affect U_{breakd} only to the extent to which they affect the thickness and structure of the film. Orig. art. has: 6 figures, 2 tables

SUB CODE: 11, 07 / SUBM DATE: 19Jul65/ ORIG REF: 007/ OTH REF: 003

Card 3/3

ACC NR: AT7004173 SOURCE CODE: UR/0000/66/000/000/0221/0226

AUTHOR: Veyler, S. Ya.; Petrova, N. V. Zalivalov, F. P.; Tomashov, N. D.; Likhtman, V. I. (Deceased)

ORG: none

TITLE: Effect of anodizing on friction in hot and cold drawing of aluminum

SOURCE: AN SSSR. Institut fizicheskoy khimii. Korroziya i zashchita konstruktsionnykh splavov (Corrosion and protection of structural alloys) Moscow, Izd-vo Nauka, 1966, 221-226

TOPIC TAGS: METAL drawing, ~~aluminum~~ cold drawing, ~~aluminum~~ anodic oxidation, aluminum drawing lubricant, DRAWN ALUMINUM, ALUMINUM OXIDE, METALFILM

ABSTRACT: The role of oxide films in cold and hot drawing of aluminum has been investigated. It was found that aluminum-oxide films formed on the surface of specimens by long exposure to the atmosphere at 20—300°C did not affect the process of drawing. However, aluminum-oxide films formed by anodizing prevented the sticking of metal to the die and decreased the resistance to drawing. Oxide film, 10 μ thick, decreased the cold drawing resistance from 600 to 210 kg, and the hot-drawing resistance at 300°C from 200 to 150 kg. Anodizing was particularly beneficial in hot drawing: without lubrication it was impossible to draw aluminum even at 1% reduction, but anodized aluminum was hot drawn with up to 13—15% reduction.

SUB CODE: 13/ SUBM DATE: 27Sep66/ ORIG REF: 007/

Card 1/1 UDC: none

ZALIVALOV, M. K.

The uneven development of capitalist economy and its reasons. Moskva, Gos. izd-vo, 1930. 139 p. Biblioteka sotsial'no-ekonomicheskikh znanii.

ZHURAVLEVA, Yekaterina Ivanovna; SERBA, Vladimir Nikitovich; LUNIN, O.G., kand.tekhn.nauk, retsenzent; ZALIVANSKAYA, S.M., retsenzent; SOKOLOVSKAYA, T.A., red.; SATAROVA, A.M., tekhn. red.

[Manufacture of caramel] Ptoizvodstvo karameli. Moskva, Pishchepromizdat, 1962. 106 p. (MIRA 15:7)
(Caramel)

APPROVED FOR RELEASE: 09/19/2001 CIA-RDP86-00513R001963710005-9"

ZALIVCHIY, V.N.; KOSHKIN, N.I.; NOZDREV, V.F.

New possibilities of the pulse method of two fixed distances.
Akust.zhur. 5 no.4:493-495 '59. (MIRA 14:6)

1. Moskovskiy oblastnoy pedagogicheskiy institut imeni N.K. Krupskoy.

(Ultrasonic waves)

ZALIVCHIY, V.N.

112-2-4764

TRANSLATION FROM: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 2, p. 327 (USSR)

AUTHORS: Zalivchiy, V.N., Zipir, A.D.

TITLE: Research by the Pulse Method Along the Saturation Line on the Absorption of Ultrasound in Ortho- and Metaxylols (Issledovaniye pogloshcheniya ul'trazvuka v orto- i mitaksilolakh impul'snym metodom po linii nasyshcheniya)

PERIODICAL: Sbornik stud. nauch. rabot po yestv.-matem. tsiklu. Mosk. obl. ped. in-t, 1956, Nr 1, pp. 32-38

ABSTRACT: The pulse method used differed from the methods described previously. Here a quartz crystal generating bilateral radiation and two (instead of one) reflectors disposed at fixed distances along both sides of the crystal radiator were used. Absorption was determined by comparing the amplitudes of the pulses received from the reflectors. The absorption factor of orthoxylol was measured at the frequency 7.6 mc and in the temperature interval 19.5° to 325°, and for metaxylol at the frequency 15.1 mc and in the temperature interval 17° to 275°. It was determined that the absorption factor relative to the square

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112-2-4764

Research by the Pulse Method Along the Saturation Line (Cont.)

of the frequency increases in the whole temperature interval. The space viscosity and that part of the absorption due to drift viscosity (Stokes absorption) were calculated from the experimental data. It was determined that qualitatively, absorption determined experimentally and absorption as calculated by the Stokes law methods did not agree in the whole temperature interval. The Stokes absorption was less than the absorption determined experimentally. In the entire temperature interval, absorption determined experimentally for metaxylol is somewhat higher than in the case of orthoxylol at the same temperatures.

L.M.L.

ASSOCIATION: Moscow Oblast Pedagogical Institute (Mosk. obl. ped. in-t)

Card 2/2

ZALIVCHIY, V.N.

Absorption of ultrasonic waves in the binary systems ethyl acetate - acetic acid. Prim. ul'traakust. k issl. veshch. no.13:157-163 '61. (MIRA 16:6)

(Ethyl acetate—Acoustic properties)
(Acetic acid—Acoustic properties)
(Absorption of sound)

ZALIVCHIY, V.N.

45

PHASE I BOOK EXPLOITATION SOV/5644

Vserossiyskaya konferentsiya professorov i prepodavateley pedagogicheskikh institutov

Primeneniye ul'traakustiki k issledovaniyu veshchestva. vyp. 10. (Utilization of Ultrasonics for the Investigation of Materials. no. 10) Moscow, Izd-vo MOPI, 1960. 321 p. 1000 copies printed.

Eds.: V. F. Nozdrev, Professor, and B. B. Kudryavtsev, Professor.

PURPOSE: This book is intended for physicists and engineers interested in ultrasonic engineering.

COVERAGE: The collection of articles reviews present-day research in the application of ultrasound in medicine, chemistry, physics, metallurgy, ceramics, petroleum and mining engineering, defectoscopy, and other fields. No personalities are mentioned. References accompany individual articles.

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Utilization of Ultrasonics (Cont.) SOV/5644

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S/081/62/000/008/022/057
B160/B101

AUTHORS: Zalivchiy, V. N., Perepechko, I. I.

TITLE: Ultrasonic interferometer for measuring the speed of ultrasound in liquids and gases

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 8, 1962, 147, abstract 8Ye5 (Sb. "Primeneniye ul'traakust. k issled. veshchestva". no. 12, M., 1960, 132 - 134)

TEXT: A description is given of the design of an interferometer designed for measuring the speed and absorption of ultrasonic waves in gases and liquids with precise adjustment of the parallelness of the radiating quartz crystal and the reflector. The oscillator used is a standard instrument which will permit a smooth change in frequency when the quartz radiating elements are changed. The reflector is set parallel to the radiator from the maximum stress across the crystal. [Abstracter's note: Complete translation.]

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