S/181/62/004/012/043/052
B125/B102

24.7580

AUTHORS: Nosov, Yu. R., and Ramus, L. T.

TITLE: The origination of recombination centers in silicon in fast thermal hardening

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3663-3665

TEXT: The influence of thermal hardening on the carrier lifetime in silicon has hitherto been studied only between 300 and 850°C (e.g. V. A. Azarkin and Ye. Z. Mazel'. FTT, 2, 2089, 1960; H. Ross, I. Madigan. Phys. Rev., 108, 1428, 1957). Here such studies are extended to hardening temperatures of up to 1200°C. At these elevated temperatures the risk of impurities penetrating into the silicon from the heating apparatus is much smaller than at lower temperatures. The governing quantity for high-temperature hardening is the cooling rate, which must amount to 100-500°C/sec for the "freezing" of the recombination centers that arise between 1200 and 1300°C. The authors achieved a cooling rate of at least 10^3 to 10^4 °C/sec. The specimen is kept at the hardening temperature for

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S/181/62/004/012/043/052
B125/B102

24.7500

AUTHORS: Nosov, Yu. R., and Ramus, L. T.

TITLE: The origination of recombination centers in silicon in fast thermal hardening

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3663-3665

TEXT: The influence of thermal hardening on the carrier lifetime in silicon has hitherto been studied only between 500 and 850°C (e.g. V. A. Azarkin and Ye. Z. Mazel'. FTT, 2, 2089, 1960; B. Ross, I. Madigan. Phys. Rev., 108, 1428, 1957). Here such studies are extended to hardening temperatures of up to 1200°C. At these elevated temperatures the risk of impurities penetrating into the silicon from the heating apparatus is much smaller than at lower temperatures. The governing quantity for high-temperature hardening is the cooling rate, which must amount to 100-500°C/sec for the "freezing" of the recombination centers that arise between 1200 and 1300°C. The authors achieved a cooling rate of at least 10^3 to 10^4 °C/sec. The specimen is kept at the hardening temperature for

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The origination of recombination ...

20 to 60 minutes and is subsequently pushed by a falling weight into a cooling vessel filled with oil. Thermal treatment without hardening shortened the carrier life to no more than 10^{-6} sec. At 1200°C, the lifetimes in the specimens hardened by such pushing were three to four times shorter than those in specimens which were simply thrown into the oil. p-n junctions having areas of $(1-2)\cdot10^{-3}$ cm^2 are produced from the quenched n-type Si plates ($\varrho \sim 7.5$ and 15 ohm·cm) by sealing in aluminum and a gold foil doped with antimony. The minority carrier lifetime in the base of the diode so produced was determined at a high injection level from the transient response of the p-n junction using the phase method. The experimental arrangement comprised a generator of the type ГНИ-1 (GNI-1), a pulse amplifier and an electron-ray tube. $N \sim \exp(-0.85\ ev/kT)$ holds for the concentration of the recombination centers arising in fast thermal hardening of silicon (at 960-1200°C). This result agrees fairly well with the results of the aforementioned previous papers. The obvious correlation between the recombination centers arising in thermal hardening and the structural defects of the lattice is explained by the necessity to introduce Au (minimum concentration 10^{15} cm^{-3}) into silicon when lifetimes of $\tau \sim 10^{-8}$ sec are to be achieved. There are 2 figures.

SUBMITTED: July 16, 1962
Card 2/2

44162
S/181/62/004/012/044/052
B125/B102

24.7510

AUTHOR: Nosov, Yu. R.

TITLE: Neutron irradiation of silicon p-n junctions

PERIODICAL: Fizika tverdogo tela, v. 4, no. 12, 1962, 3665-3667

TEXT: The present article shows that the carrier lifetime in the base of a silicon diode cannot be shortened to more than ~0.1 μsec by bombarding the diode with neutrons. According to I. Evans (Direct Current, 4, No. 3, 68, 1958), the recombination centers resulting from nuclear irradiation are partly disactivated. Accordingly, aluminum wires were sealed in n-type silicon crystals. The p-n junctions so produced were exposed to neutron irradiation. A foil of antimony-doped gold served as optical contact. For comparison, p-n junctions produced by the same technique were subjected to thermal hardening at 1200°C and then likewise exposed to neutron irradiation. The effective lifetime τ of the non-equilibrium carriers in the base of the diodes referred to was determined from the junction characteristics before and after irradiation. Under the present experimental conditions τ is equal to the minority carrier lifetime in

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Neutron irradiation of silicon ...

the case of a high injection level and $\tau = 2Q_{tot}/I_{d-c}$ holds. With $U_{rev} = 30v$, Q_{tot} is the total charge transferred by the reverse current and $I_{d-c} = 30$ ma. The results averaged over Q_{tot} and I_{d-c} after the irradiation of the p-n junctions with neutron fluxes of differing strengths are compared. τ is related with the integral neutron flux N as $\tau \sim N^{-0.6}$ and not as $\tau \sim N^{-1}$ (e.g. L. Orile, Ir. Curtis. J. Appl. Phys., 1174, 1959). With $N > 3 \cdot 10^{15}$ cm^{-2}, the shortening of lifetime is less affected by the irradiation density. With $N \gtrsim 5 \cdot 10^{16}$ cm^{-2}, the reverse resistance decreases by a factor varying from 5 to 10, whilst the direct resistance increases by more than twice as much. The volt-ampere characteristics of certain p-n junctions have the form of a short circuit even after irradiation with low neutron fluxes ($5 \cdot 10^{15}$ cm^{-2}). There is 1 table.

SUBMITTED: July 16, 1962

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ACCESSION NR: AP4014675 S/0108/64/019/001/0054/0056

AUTHOR: Nosov, Yu. R.

TITLE: Effect of the charge capacitance of a p-n junction upon the pulse operation of a semiconductor diode

SOURCE: Radiotekhnika, v. 19, no. 1, 1964, 54-56

TOPIC TAGS: semiconductor, semiconductor diode, semiconductor diode capacitance, semiconductor diode pulse operation, semiconductor diode transient response

ABSTRACT: The transient response formula and curves are developed for a semiconductor diode with a graded structure of its p-n junction. Conditions for substituting a constant equivalent capacitance for the variable p-n-junction capacitance are determined; the equivalent capacitance characterizes (with an error of 5% or less) both the rate of charging the diode capacitance and its stored

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ACCESSION NR: AP4014675

charge. A formula for this equivalent capacitance is developed. It is recommended that the nominal diode capacitance be rated at a reverse-bias voltage of 5 v (pulse height is assumed to be within 5-30 v). Orig. art. has: 3 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 14Jul62 DATE ACQ: 07Feb64 ENCL: 00

SUB CODE: GE. NO REF SOV: 000 OTHER: 000

Card 2/2

NOSOV, Yu.R.; GUBYRIN, L.V.

Germanium diode with high switching speed. Radiotekh. i elektron. 10 no.3:570-572 Mr '65. (MIRA 18:3)

NOSOV, Yuriy Romanovich; VOLKOVA, I.M., red.

[Semiconductor pulse diodes] Poluprovodnikovye impul'snye diody. Moskva, Sovetskoe radio, 1965. 224 p. (MIRA 18:12)

MOSKVA, A. A.

Tobacco Industry

38 years of work in the factory. Tabak 14, No. 1, 1953.

Monthly List of Russian Accessions, Library of Congress
June 1953. UNCL.

ZHIVOTKOV, S.G.; NOSOVA, A.A.

Experience in the introduction of business accounting in the technical administrations of long-distance cable and radio relay lines. Vest. sviazi 24 no.4:30-31 Ap '64. (MIRA 17:9)

1. Nachal'nik Upravleniya tekhnicheskoy ekspluatatsii kabel'nykh i radioreleynykh magistraley (for Zhivotkov). 2. Starshiy inzhener-ekonomist Upravleniya tekhnicheskoy ekspluatatsii kabel'nykh i radioreleynykh magistraley (for Nosova).

DYSKIN, I.M., starshiy nauchnyy sotrudnik; NOSOVA, A.P., mladshiy nauchnyy sotrudnik

Multilayer particle boards. Nauch. trudy TSNIIMOD no.11:73-85 '61. (MIRA 17:9)

1. Laboratoriya novykh materialov TSentral'nogo nauchno-issledovatel'skogo instituta mekhanicheskoy obrabotki drevesiny.

MOSOVA, A.S.

The K-100-1 ring twister. Biul.tekh.-ekon.inform. no.10:56-58 '61. (MIRA 14:10)
(Spinning machinery)

MONAKHOVA, G.N., nauchnyy sotrudnik; ROMASHEV, M.P., nauchnyy sotrudnik; NOSOVA, A.S., nauchnyy sotrudnik; SHISHIGINA, I.A., nauchnyy sotrudnik

Experience in the operation of OM-S spinning machinery in the New Combing Factory of the V.I. Lenin Cotton Mills in Glukhovo. Tekst. prom. 24 no.2:29-32 F '64. (MIRA 17:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut khlopchatobumazhnoy promyshlennosti (for Monakhova, Romashev). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut legkogo i tekstil'nogo mashinostroyeniya (VNIILTekmash) (for Nosova, Shishigina).

PORTUGALOV, V.V.; GAEVSKAYA, M.S. [Gayewskaya, M.S.] GERSHTEIN, L.M. [Gershteyn, L.M.]; NOSOVA, E.A.

Changes in the nerve cell proteins in dogs during resuscitation from the state of clinical death. Physiol. Bohemoslov. 14 no.3:271-275 '65.

1. Institute of Brain, USSR Academy of Medical Sciences, and Laboratory of Experimental Physiology of Resuscitation, USSR Academy of Medical Sciences, Moscow.

GUTNER, I.I.; NOSOVA, G.D.

Specific granulation in the nerve cells of the human brain. Doklady Akad.nauk SSSR 77 no.1:105-107 1 Mar 51. (CLML 20:6)

1. Presented by Academician K.I.Skryabin 2 January 1951.

NOSOVA, G.D.

USSR/Biology - Histology Jul 52

"Changes Due to Age and Occurring in a Special Fuchsinophilic Granularity of the Nerve Cells of the Human Brain," I. I. Gutner, G. D. Nosova, Yaroslavl' State Med Inst

"Dok Ak Nauk SSSR" Vol LXXXV, No 1, pp 195-197

Found that the granularity in question is absent in young children, slowly increases (reaching a max at the age of 18-30 yrs), and begins to drop off at an age of about 50 yrs. Presented by Academician K. I. Skryabin 6 May 52.

224T1

SOV/70-3-1-4/26

AUTHORS: Bagaryatskiy, Yu.A. and Nosova, G.I.

TITLE: A More Accurate Determination of Atomic Co-ordinates of the Metastable ω-phase in Ti-Cr Alloys (Utochneniye koordinat atomov v metastabil'noy ω-faze v splavakh Ti-Cr)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 1, pp 17-28 (USSR)

ABSTRACT: A precession X-ray camera, which gives directly the reciprocal lattice, was used to confirm the trigonal symmetry of the ω-phase which was established by the present authors (Ref 1). More accurate values for the atomic co-ordinates in the hexagonal unit cell are now given. It was established earlier (Refs 1, 4) that the lattice of the ω-phase is hexagonal with three atoms in the unit cell and the following values were found for an annealed titanium-5% chromium alloy a_ω = 4.60 kX, c_ω = 2.82 kX. Similar values were found by Silcock et al (Ref 2). The position of the atoms in the unit cell corresponded to 000, ± (1/3, 2/3, u) where u = 0.48 ± 0.01. In Ref 2 the value of u was found to be 1/2. However, this small difference in the values of u leads to a difference in the space groups and symmetry. In the first case, the

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A More Accurate Determination of Atomic Co-ordinates of the Metastable ω-phase in Ti-Cr

crystal belongs to trigonal subsyngony (space group D_{3d}^{3} - $P\bar{3}m1$) . If, however, u = 1/2 the space group is D_{6h}^{1} - P6/mmm . In order to resolve this discrepancy, the symmetry of the ω-phase and the atomic co-ordinates were re-determined using the X-ray camera described by Bagaryatskiy and Umanskiy (Ref 5). Hard molybdenum radiation was employed. The structure of the metastable ω-phase in an annealed titanium-5% chromium alloy which was found in Ref 1 has been confirmed again. The space group is D_{3d}^{3} - $P\bar{3}$ m 1 , $a_{hex} = 4.60_{7\pm5}$ kX, $c_{hex} = 2.82_{1\pm3}$ kX . The position of the atoms is now found to be as follows 3(Ti,Cr) - 000, $\pm$(1/3 2/3 u) where u = 0.480 $\pm$ 0.003 . Almost complete transformation of the β-crystal into the ω-phase on annealing was established in accordance with the following law:

$\underline{a}_{\omega} \parallel [1\bar{1}0]_{\beta}$, $\underline{c}_{\omega} \parallel [111]_{\beta}$

SOV/70-3-1-4/26

A More Accurate Determination of Atomic Co-ordinates of the Metastable ω-phase in Ti-Cr

(the amount of the residual β-phase is not more than 5-10%).
There are 6 figures, 4 tables and 11 references, 7 of which are Soviet and 4 English.

ASSOCIATION: Institut metallovedeniya i fiziki metallov TsNIIChM (Institute of Metallography and Physics of Metals TsNIIChM)

SUBMITTED: January 2, 1957

Card 3/3

78-3-3-40/47

AUTHORS: Bagaryatskiy, Yu. A. , Nosova, G. I. , Tagunova, T. V.

TITLE: Investigations of the Phase Diagrams of the Alloys Titanium--Chromium, Titanium-Tungsten and Titanium-Chromium-Tungsten, Produced by the Method of Powder-Metallurgy (Izucheniye diagramm sostoyaniya splavov titan-khrom, titan-vol'fram i titan-khrom-vol'fram, izgotovlennykh metodom poroshkovoy metallurgii)

PERIODICAL: Zhurnal Neogranicheskoy Khimii, 1958,Vol.3, Nr 3,pp.777-784 (USSR)

ABSTRACT: The metallic-ceramic alloys titanium-chromium, titanium--tungsten and titanium-chromium-tungsten were produced by the calcium-hydride method. After melting the alloys were tempered at 950 - 1000°C. The produced alloys were investigated by radiographic and microstructural methods. In the system titanium-chromium it was found that at 670°C and 15,5 % chromium an eutectic transformation of $\beta \rightarrow \alpha + TiCr_2$ occurs. In the diagram of titanium-tungsten with more than 20 % tungsten the phases $\alpha + \beta + \delta$ were not observed. At a temperature of 725°C an eutectic decomposition of the

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78-3-3-40/47

Investigations of the Phase Diagrams of the Alloys Titanium-Chromium, Titanium -Tungsten and Titanium-Chromium-Tungsten, Produced by the Method of Powder-Metallurgy

β-phase occurs. The eutectoid concentration lies at 28 % tungsten. The products which occur in the eutectoid decomposition are solid solutions of tungsten in α-titanium (α-phase) and titanium in tungsten (β-phase). In the ternary diagram titanium-chromium-tungsten stable solid solutions occur at 1000°C in all investigated domains. In alloys with small quantities of chromium and tungsten a transformation of β to α' occurs after hardening at 1000°C. On the basis of the investigations it was found that the phase diagram of the system titanium-chromium-tungsten belongs to domains rich in titanium of the type of the eutectic phase diagram. The triple eutectoid $\alpha + \sigma + TiCr_2$ forms in the domain of a comparatively low temperature (500°C). There are 12 figures, 1 table, and 6 references, 3 of which are Soviet.

ASSOCIATION: Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii (Institute for Metallography and Physics of Metals. Central Scientific Research Institute for Ferrous Metallurgy)

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78-3-3-40/47

Investigations of the Phase Diagrams of the Alloys Titanium-Chromium, Titanium-Tungsten and Titanium-Chromium-Tungsten, Produced by the Method of Powder-Metallurgy

SUBMITTED: June 25, 1957

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SOV/137-58-7-15649

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 247 (USSR)

AUTHORS: Bagaryatiskiy, Yu. A., Tagunova, T. V., Nosova, G. I.

TITLE: Metastable Phases in Alloys of Titanium with Transition Elements (Metastabil'nyye fazy v splavakh titana s perekhodnymi elementami)

PERIODICAL: Sb. tr. In-t metalloved. i fiz. metallov Tsentr. n.-i. in-ta chernoy metallurgii, 1958, Vol 5, pp 210-234

ABSTRACT: It is shown that in alloys of Ti with transition metals (Cr, Mn, Fe, Co, V, Mo, and W) the existence of several metastable phases (MP) is possible at room temperature. The (MP) α' differs from the stable phase (SP) α only by the supersaturation with the second element; it forms from the high temperature β phase by the martensite process by rapid cooling. The β phase can also exist in the metastable condition with the concentration of the second element higher than a certain critical one (but lower than that of the equilibrium in the Ti-V and Ti-Mo alloys). Under these conditions it acquires certain anomalous properties (for example a negative temperature coefficient for the resistance). Also, MP's

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Metastable Phases in Alloys (cont.)

can be formed with a crystalline structure differing from the SP structure: the α'' phase with a rhombic lattice and the ω phase which is probably a low-temperature modification of the β phase. The ω phase may form both by the diffusion-free process and in the process of the annealing of the β phase. All three MP's developing from the β phase on tempering, the α', the α'', and the ω phase do not demand any transposition of atoms surpassing interatomic distances for their formation and are martensite phases. The ω phase is a martensite phase of a special type, because during its formation no design in relief appears on its surface. Bibliography: 22 references.

1. Titanium alloys--Stability 2. Titanium alloys--Phase studies L. V.

Card 2/2

SOV/137-58-7-15707

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 257 (USSR)

AUTHORS: Nosova, G.I., Rozenberg, V.M.

TITLE: Study of the Effect of Structural Modification Related to Recrystallization on Creep Characteristics (Izucheniye vliyaniya izmeneniya struktury, svyazannogo s rekristallizatsiyey, na polzuchest')

PERIODICAL: Sb. tr. In-t metalloved. i fiz. metallov Tsentr. n.-i. in-ta chernoy metallurgii, 1958, Vol 5, pp 514-521

ABSTRACT: Results of the study of the effect of structural modification produced by a preliminary deformation equal to 90% on the creep (C) in bending at 560-700°C are described. The investigation was conducted on solid solutions of Fe-Ni-Cr-Co in deformed and annealed states with a variable content of Co from 0 to 20 weight %. In addition to measurement of the rate of C, a study of the kinetics of recovery was carried out (by the variation in the width of X-ray lines) and also the kinetics of recrystallization. It is determined that at relatively low temperatures ($\leq 600^{\circ}$) the structure is the main factor determining the behavior of solid solutions during slow plastic

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SOV/137-58-7-15707

Study of the Effect of Structural Modification (cont.)

deformation. At relatively high temperatures, at which a structure affording a high degree of strength cannot exist, the chemical composition of the solid solution becomes the main factor that determines the strength of the interatomic bonds in the crystalline lattice. Meanwhile, the conservation of a structure affording a high degree of strength at elevated temperatures also depends on the strength of the interatomic bonds. The rate of C in specimens hardened by cold deformation and without preliminary stabilization is sharply increased in the range of temperatures of crystallization. Also, the area with a steady rate of C is displaced towards longer periods of time. It is indicated that during the simultaneous action of temperature and stresses a weakening of previously strained specimens occurs more extensively than under the action of temperature alone. Bibliography: 6 references.

1. Metals--Mechanical properties 2. Metals--Structural analysis L. G.
3. X-ray analysis--Applications

Card 2/2

AUTHORS: Nosova, G. I. and Rozenberg, V. M. SOV/126-6-2-19/34

TITLE: Study of the Influence of Preliminary Deformation in the Cold State on Creep (Izucheniye vliyaniya predvaritel'noy kholodnoy deformatsii na polzuchest')

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 2, pp 321-325 (USSR)

ABSTRACT: In this paper the results are described of studying the influence of changes in the structure obtained as a result of preliminary deformation on the creep at elevated temperatures. The experiments were effected on solid solutions of iron-nickel-chromium-cobalt with variable cobalt contents and the following compositions:

No.	C	Mn	Ni	Cr	Co	Fe
213	0.035	0.19	41.76	14.00	0	rest
214	0.035	0.52	40.23	14.23	10	"
215	0.035	0.79	40.28	14.19	20	"

The experiments consisted of determining creep in bending tests. Results obtained in such tests are fully satisfactory for characterising qualitatively the

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Study of the Influence of Preliminary Deformation in the Cold State on Creep

properties of the material. The thus obtained data were considered only as relative values and no conclusions were made on the absolute magnitudes of the high temperature strength. The solid solutions were investigated in the deformed and in the annealed states; the degree of preliminary deformation amounted to 90%. In addition to measuring the creep speed, the kinetics of relaxation (widening of the X-ray lines) and the kinetics of recrystallisation of these alloys were studied and the results of the creep tests for the temperatures 560 to 700°C are entered in Table 2, p 322. The results, which are graphed and tabulated, lead to the following conclusions:

1. At relatively low temperatures (below 600°C) the basic factor determining the behaviour of Fe-Ni-Cr solid solutions during slow plastic deformation is the structure. At relatively high temperatures at which the structure which would ensure a high strength cannot be maintained the basic factor will be the chemical composition of the solid solution, which determines the strength of the

Study of the Influence of Preliminary Deformation in the Cold State on Creep

SOV/126-6-2-19/34

inter-atomic bonds in the crystal lattice. Thereby, it is necessary to take into consideration that conservation of a structure which ensures a high strength at elevated temperatures also depends on the strength of the inter-atomic bonds. The creep speed of specimens hardened by deformation in the cold state and not preliminarily stabilised increases sharply in the temperature range where recrystallisation occurs. Thereby, the stage with a steady state creep speed shifts towards longer time durations. Under the simultaneous effects of temperature and stresses, softening of preliminarily deformed specimens is more intensive than solely as a result of elevated temperatures. There are 5 figures, 4 tables and 6 references, 3 of which are Soviet, 3 English.

ASSOCIATION: TsNIIchermet
SUBMITTED: December 17, 1956

Card 3/3 1. Alloys--Deformation 2. Alloys--Creep 3. Alloys--Heat treatment 4. Alloys--Test results

18(6) SOV/20-122-4-14/57

AUTHORS: Bagaryatskiy, Yu. A., Nosova, G. I., Tagunova, T. V.

TITLE: The Laws of the Formation of Metastable Phases in Titanium Alloys (Zakonomernosti obrazovaniya metastabil'nykh faz v splavakh na osnove titana)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 4, pp 593-596 (USSR)

ABSTRACT: In previous papers (Refs 1, 2), the authors investigated the alloys Ti-Cr, Ti-W, Ti-Mn in which the metastable phases α', α'', ω, and β are formed by calcination of the high-temperature β-phase. This paper investigates a wider complex of alloy systems: The authors investigated (after hardening and tempering) alloys of titanium with transition elements of the 4^{th}, 5^{th}, and 6^{th} periods of the periodical system of the elements: vanadium, niobium, tantalum, molybdenum, tungsten, and rhenium. These alloys were produced in a metalloceramic manner on the basis of titanium. The phase composition of all the investigated alloys were found by radiography. The metastable phases α'' and ω (which do not occur in the equilibrium diagrams of state) are formed (by harden-

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The Laws of the Formation of Metastable Phases in Titanium Alloys

ing) in all the investigated systems at defined concentrations of the second element. The minimum hardness of the alloys corresponds to the presence of an α" phase in the alloys. The sharp maximum of hardness, however, corresponds to the presence of the ω-phase. A diagram shows the laws of the dependence of the rhombic cell of the α"-phase on the composition for the alloys Ti-Mo and Ti-Nb. The ω-phase (together with the remanent β-phase) is sufficiently well visible (after hardening) in the radiograms of the following alloys: with 14 % V, with 24 % W, with 10 % Mo, and somewhat less distinctly - in the radiograms of the hardened alloys with 28 % Nb and 14 % Re. An other diagram gives the concentrations at which the α"-phase and the ω-phase occur in the investigated titanium alloys during hardening. In all the investigated systems, a tempering of the alloys in which the β-phase is conserved after hardening causes a formation of an ω-phase in them by diffusion. The total scheme of the decomposition of the β-phase is shown in a figure. The tempering of the alloys of the α"-phase structure was investigated in detail only for the alloys Ti-W, Ti-Mo, and Ti-Nb. This decomposition satisfies the scheme $\alpha'' \rightarrow \alpha + \beta$. In all the investigated cases, considerable increase of the hardness of alloys was observed

The Laws of the Formation of Metastable Phases in Titanium Alloys

in the initial stage of the decomposition of the α"-phase. There are 4 figures, 1 table, and 4 references, 3 of which are Soviet.

ASSOCIATION: Institut metallovedeniya i fiziki metallov Tsentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii (Institute of Metallography and Metal Physics of the Central Scientific Research Institute of Ferrous Metallurgy)

PRESENTED: May 24, 1958, by G. V. Kurdyumov, Academician

SUBMITTED: May 23, 1958

Card 3/3

MOSKVA, G. I., TAGUNOVA, T. V., BOGARYATSKIY, Yu. A.

"[redacted]. On the Nature of Omega-Phase in Quenched Titanium Alloys."

Central Scientific Research Inst. for Ferrous Metallurgy. Radio Street, 23, Moscow, USSR.

paper submitted for 5th Gen. Assembly, Sumposium on Lattice Defects, Intl. Union of Crystallography, Cambridge U.K. Aug 1960.

BAGARYATSKIY, Yu.A. (Moskva); NOSOVA, G.I. (Moskva)

Accessory elements on the X-ray pictures of titanium alloys.
Izv.AN SSSR. Otd.tekh.nauk. Met.i topl. no.4:186-188 Jl-Ag
'62. (MIRA 15:8)
(Titanium alloys--Metallography)

S/137/62/000/012/021/085
A006/A101

AUTHORS: Bagaryatskiy, Yu. A., Nosova, G. I., Tagunova, T. V.

TITLE: On the nature of the ω-phase in quenched titanium alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1962, 32, abstract 12I204 ("Sb. tr. In-t metalloved. i fiz. metallov Tsentr. n.-i. in-ta chernoy metallurgii", 1962, v. 7, 307 - 314)

TEXT: This is a reviewing report submitted to the V. International Congress of Crystallographs (Cambridge, England, August 1960). On the basis of analyzing the results of a great number of studies, the conclusion is drawn that the ω-phase in Ti-alloys should be considered as a martensite phase of a special kind. The characteristic feature in the formation of martensite phases of this kind is the absence of a relief on the section surface. There are 30 references.

P. Novik

[Abstracter's note: Complete translation]

Card 1/1

S/126/62/013/003/013/023
E021/E180

18.1 1185

AUTHORS: Bagaryatskiy, Yu.A., and Nosova, G.I.

TITLE: The $\beta \rightarrow \omega$ transformation in titanium alloys on quenching - a martensitic transformation of a special kind

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.3, 1962, 415-425

TEXT: The present investigation was carried out on Ti-Cr alloys containing 5-14% Cr. In alloys with 5-8% Cr the ω-phase was formed by quenching from the β-phase. In alloys richer in Cr, it could be formed by super-cooling, for example, to -186 °C. Samples containing 9-11.5% Cr were also compressed to 10, 20 and 50% deformation. No change in phase composition was noted as a result of this deformation. Thus, with a sufficiently high concentration of chromium, the formation of ω-phase would take place only by diffusion of the alloying element. Experiments with alloys containing 5, 6 and 8% Cr were carried out using high rates of cooling (8000-11000 °/sec) on thin-walled

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specimens. X-ray photographs showed that, after cooling, the structures of the 5, 6 and 8% Cr alloys were α', β+ω, and β, respectively. Thus, the 6% Cr alloy suffered a transformation in which diffusion played no part. Alloys with 5.5-8% Cr were prepared in the form 1.5-2 mm diameter and 130 mm long wires. The samples consisted of β+ω phases after quenching. Heating was then carried out at rates of 200-700 °/sec by an electrical current. It was shown that the temperature of the beginning of the ω to β transformation was close to 455-460 °C. The transformation ω to β for the alloy containing 5.5% Cr appeared to take place without diffusion occurring.
There are 4 figures and 1 table.
ASSOCIATION: Institut metallovedeniya i fiziki metallov TsNIIChM (Institute of Science of Metals and Physics of Metals, TsNIIChM)
SUBMITTED: May 10, 1961

X

BAGARYATSKIY, Yu.A. (Moskva); NOSOVA, G.I. (Moskva); TRAVINA, N.T. (Moskva)

X-ray investigation of the decomposition of solid solutions in copper-nickel-cobalt alloys. Izv. AN SSSR. Otd. tekh. nauk. Met. i gor. delo no.3:154-161 My-Je '63. (MIRA 16:7)
(Copper-nickel-cobalt alloys--Metallography)

L 3076-66 EWT(1)/EWT(m)/EWP(w)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c) JD/HW/GG
ACCESSION NR: AP5018078 UR/0020/65/163/001/0079/0082

64
61
B

AUTHOR: Nosova, G. I.; Travina, N. T.

TITLE: Change in mechanical properties of single crystals of alloys of the copper-nickel-cobalt system during different aging stages

SOURCE: AN SSSR. Doklady, v. 163, no. 1, 1965, 79-82

TOPIC TAGS: copper base alloy, nickel containing alloy, cobalt containing alloy, metal aging, metal recrystallization

ABSTRACT: This is a continuation of earlier work by the authors (Izv. AN SSSR, Metallurgiya i gornoye delo, v. 3, no. 2, 154, 1963) on the decay (stratification) of copper-nickel-cobalt alloys during quenching and tempering. The present study is devoted to the mechanical processes of the alloy during the following decay stages: initial solid solution, formation of periodically varying crystal lattice structure, stage of coexistence of two tetragonal phases, and existence of one cubic phase and one tetragonal phase. These stages were produced by quenching and tempering for different lengths of time at 700°. The single crystals for the tests were grown from the melt. The copper-nickel-cobalt percentages were 35-30-35, 50-30-30, 50-30-40, and 50-25-25. The quantities measured were the time variation and the temperature dependence of the cleaving stress σ_c (determined from the tension

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L 3076-66
ACCESSION NR: AP5018078

curves), the dependence of the degree of hardening on the alloy structure, and the stress-strain relations. The differences between the different alloys are explained from the point of view of the differences in the degree of stratification during decay and the changes occurring in the lattice parameters. Comparison of the experimental critical cleavage stresses with the values calculated on the basis of existing theories shows that best agreement is obtained with the theory of N. F. Mott and F. R. N. Nabarro (Proc. Phys. Soc. v. 52, 86, 1940). It is concluded therefore that the critical cleavage stress is determined by the average internal stress produced by the atoms of the alloying element. This report was presented by G. V. Kurdyumov. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I. P. Bardina (Central Scientific-Research Institute of Ferrous Metallurgy)

SUBMITTED: 18Dec64 ENCL: 00 SUB CODE: MM, SS

NR REF SOV: 001 OTHER: 004

Card 2/2

L 44311-66 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD/JH

ACC NR: AP6019832 (N) SOURCE CODE: UR/0370/66/000/001/0126/0135

AUTHOR: Bagaryatskiy, Yu. A. (Deceased) (Moscow); Nosova, G. I. (Moscow); Travina, N.T. (Moscow)

ORG: none

TITLE: Changes in the structure of Al-Mg and Al-Mg-Zn alloys on aging and their effect on the mechanical properties of the alloys

SOURCE: AN SSSR. Izvestiya. Metally, no. 1, 1966, 126-135

TOPIC TAGS: aluminum base alloy, magnesium, zinc, phase composition, metal aging, tempering

ABSTRACT: Differences in the atomic dimensions of alloy components may markedly influence the mechanism of phase transformations in alloys and particularly the decomposition of supersaturated solid solutions. For this very reason, it is of special interest to study the aging of Al-Mg and Al-Mg-Zn alloys, whose components differ greatly in atomic radii, and in which tempering at 50-400°C may lead to the decomposition of the supersaturated α-solid solution with the formation of the equilibrium phases α and β(Al_3Mg_2) whose crystalline structure has been variously defined as hexagonal and complex-cubic. Regarding Al-Mg alloys

Card 1/3 UDC: 669.017.12

there exist conflicting opinions on the structure of phases segregating in these alloys during their tempering. Thus some investigators believe that the metastable phase β' is the first to form, while others conclude that the equilibrium phase β with a more or less distorted structure segregates already in the early stages of tempering. To clarify this question, the alloy of Al + 9.4% Mg was radiographically examined following its quenching from 440°C and tempering at 150, 218, and 270°C. Findings: the decomposition of the solid solution during tempering at 150°C occurs much more slowly than at 218 and 270°C but the phase segregating in the early stages of tempering at 150°C is the same β-phase as that segregating at higher temperatures. As for the Al-Mg-Zn ternary alloys, by contrast with the Al-Mg binary alloys, they are capable of natural aging. In this connection the authors investigated the effect of different atomic ratios of Mg to Zn (1:1 and 1:2) on the nature of decomposition of the solid solution following both natural and artificial aging, thus establishing that the sequence of structural changes during the aging of the Mg-rich Al-Mg-Zn ternary alloys (Al + 4 wt.% Mg + 5 wt.% Zn) is the same as in Mg-poor alloys of this kind (Al + 2 wt.% Mg + 5 wt.% Zn), but in the Mg-rich alloys these processes occur much more rapidly. In the Al-Mg alloys hardness, ultimate strength and yield point begin to increase during the initial stage of tempering and go through two maxima -- one very early during tempering (within the first 3-10 min) and the other, accompanying the segregation of substantial amounts of the β-phase. In the Al-Mg-Zn alloys these

L 44311-66
ACC NR: AP6019832

mechanical properties also increase during the initial stage of aging; they decrease only after prolonged tempering (more than 250 hr at 150°C), i.e. clearly, following coagulation of particles of the T-phase. Orig. art. has: 8 figures, 3 tables.

SUB CODE: 13, 11/ SUBM DATE: 08Aug64/ ORIG REF: 003/ OTH REF: 018/

Card 3/3

NOSOVA, I.A.

Feeding habits of some planktonovorous fishes (the smelt Osmerus eperlanus, the bream Abramis ballerus, the whitefish Coregonus albula) in Rybinsk Reservoir. Trudy Gidrobiol. ob-va 12:214-234 '62. (MIRA 15:12)

1. Kafedra zoologii bespozvonochnykh Moskovskogo gosudarstvennogo universiteta.
(Rybinsk Reservoir—Fishes—Food)

5(4)

AUTHORS: Rakov, A. A., Veselovskiy, V.I., Nosova, Y.I., SOV/76-32-12-8/32
Kasatkin, E. V., Borisova, T. I.

TITLE: The Mechanism of the Joint Electrochemical Formation of Ozone, Persulfuric Acid and Oxygen on the Platinum Electrode (O mekhanizme sovmestnogo elektrokhimicheskogo obrazovaniya ozona, nadsernoy kisloty i kisloroda na platinovom elektrode)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2702 - 2710 (USSR)

ABSTRACT: The electrolysis is carried out in 10n sulfuric acid with a cylindrical platinum electrode refrigerated by methyl alcohol. Analyses of H_2O_2, H_2SO_5, $H_2S_2O_8$ and ozone and measurements of the general acid concentration were carried out in brief intervals. Two stages were observed (at $-50^{\circ}C$ and 0,5 A/cm^2). In the first stage oxygen was formed at a potential of 1,0 to 1,8 V, while in the second stage the potential rose to 3,0 V resulting in a high persulfuric acid yield and a low ozone yield. The transition took place within 1 to 2 minutes. By means of a rapidly revolving platinum electrode in the

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The Mechanism of the Joint Electrochemical Formation of SOV/76-32-12-8/32
Ozone, Persulfuric Acid and Oxygen on the Platinum Electrode

Dewar flask which was filled with a freezing mixture of carbon-dioxide snow and methyl-alcohol, polarization curves were plotted at various temperatures in 10n sulfuric acid. Also in this case the jump in potential was noted, the curves differing according to whether they were plotted beginning at a low amperage and ending at a high one, or vice-versa. All showed a hysteresis loop. At a temperature of -70°C a third stage occurred in which ozone is produced abundantly at a potential of 5,5 to 7,0 V. These jumps in potential and the chemical reactions due to them are explained by the changing surface finish of the electrode and the influence of intermediate platinum compounds. There are 8 figures and 19 references, 7 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova Moskva
(Physico-Chemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: July 10, 1957
Card 2/2

NOSOVA, K. I.

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...; [sbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.N. Frumkin (Resp. Ed.) Academician, O.A. Yesin, Professor; S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, S.I. Zhdanov (Resp. Secretary); B.N. Kabanov, Professor, Ya. M. Kolotyrkin, Doctor of Chemical Sciences; V.V. Losev, P.D. Lukovtsev, Professor; Z.A. Solov'yeva; V.V. Stender, Professor; and G.M. Florianovich; Ed. of Publishing House: M.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodepositon and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included here have been published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

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Transactions of the Fourth Conference (Cont.) SOV/2216

AVAILABLE: Library of Congress

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Card 34/34

SOV/76-33-2-18/45

5(4)

AUTHORS: Nosova, K. I., Rakov, A. A., Veselovskiy, V. I.

TITLE: A Study of the Electrochemical Behavior of Ozone on the Platinum Electrode by the Method of Cathodic Polarography (Izucheniye elektrokhimicheskogo povedeniya ozona na platinovom elektrode metodom katodnoy polyarografii)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 2, pp 349 - 356 (USSR)

ABSTRACT: Experimental material concerning the cathodic reduction of ozone on the rotating platinum electrode in sulfuric acid solutions at 25, 0, -30, -50 and -70°C was the basis for thorough investigations on the mechanism of the electrode reaction in the region of high anode potentials (analogous to the experiments in reference 3). The apparatus used was previously described (Ref 4). The rate of rotation of the platinum electrode was about 3000 rpm in all experiments. The stationary potential was determined as a function of the temperature at constant ozone concentration in 10 n H_2SO_4 (Table 1) and as a function of the ozone concentration at 25°C (Table 2). The polarogram curves (Fig 1) which were obtained

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in 10 n H_2SO_4 saturated with 20% ozone and at 25°C indicate a value of $\varphi_{1/2}$= 1.30 volt for the ozone reduction, while the reverse curve shows a half-wave of $\varphi_{1/2}$=1.55 volt for the ozone reduction. The size of the limiting current is directly proportional to the ozone concentration in the solution, so that the method of cathode polarography with the rotating Pt electrode can be used for a quantitative determination of ozone in solutions and in the gaseous phase. At lower temperatures (-30 and -70°) two polarogram waves appear for the ozone reduction (Figs 3,4), which is explained in terms of a two-stage reduction reaction ($O_3+e^- \longrightarrow O_3^-$; $O_3^- + H^+ \longrightarrow O_2 + OH$). It is assumed, on the basis of the formation of surface oxygen compounds on platinum, that the following reaction mechanism takes place:

$PtO+2\ OH \longrightarrow PtO[O]_{ads}+H_2O$; $PtO[O]_{ads}+2H^++2\ e^- \longrightarrow PtO+H_2O$.

A Study of the Electrochemical Behavior of Ozone on the Platinum Electrode by the Method of Cathodic Polarography SOV/76-33-2-18/45

There are 4 figures, 6 tables, and 7 references, 5 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova, Moskva (Physical-Chemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: July 10, 1957

Card 3/3

VLASOVA, E.N.; NOSOVA, L.A.; KOZLOV, D.V.; PLATONOV, V.F.

Use of polyamides in the friction parts of motor vehicles. Plast. massy no.1:38-46 '61. (MIRA 14:2)
(Motor vehicles) (Polyamides)
(Bearings (Machinery))

S/122/60/000/004/006/014
A161/A130

AUTHORS: Vlasova, K.N., Candidate of Technical Sciences; Nosova, L.A., Engineer

TITLE: Some properties of polyamides as machine material

PERIODICAL: Vestnik mashinostroyeniya, no. 4, 1960, 33 - 39

TEXT: The article presents general information in digest form on the chemical nature of polyamide resins, their properties and behavior, application for machine parts. The reviewed information sources are non-Soviet with one exception. Practical recommendations are given for proper applications. The Soviet polyamides used for machine parts and bearing linings are capron, П -68 (P-68), АК7 (AK7), П -6 (P-6), and softer for sealings and linings П -54 (P-54), П -548 (P-548) and ПКРТ-3 (PKRT-3). The explanation of trade names is the following. Figures in P-6, P-68, P-54 and P-548 mean the quantity of methylene groups (CH_2) in raw material; e.g., in P-548 the Figure 5 shows the group number in a molecule of caprolactam, 4 in a molecule of adipic acid, and 8 in one of sebacic acid; in AK-7, the Figure 7 indicates the percent content of caprolactam (K) in adipic acid (A). The physical properties of the Soviet polyamides are given in tables.

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Some properties of polyamides as machine material

S/122/60/000/004/006/014
A161/A130

The recommendations concern service temperatures, stress relief by boiling water or steam, permissible pressures, etc., spraying for coatings on metal. It is mentioned in conclusion that many Soviet plants use capron waste in the form of fiber, hosiery, gates and risers. It is only natural that plants supplying such waste do not standardize it, and the plants using it reprocess the waste by primitive means in autoclaves using nitrogen containing oxygen and sometimes in high quantities; molten material is kept molten for too long, injected into molds too slowly. Unstable mechanical properties and uneven monomer content are the result. Besides, in many investigations (mostly of capron) the test specimens are prepared from waste or secondary capron, and this leads to wrong conclusions and recommendations. The author stresses the economic importance of proper polyamide use. There are 10 figures, 4 tables and 7 references: 1 Soviet-bloc and 6 non-Soviet bloc. The references to the English-language publications read as follows: "Modern Plastics", no. 1, 1955, v. 33, 158-164; "Machine Design", no. 5, 1956, v. 28, 95-99; "Machine Design", no. 4, 1956, v. 28, 95-105; "Journal SPE", no. 2, 1957, v. 13.

Card 2/2

NOSOVA, L.A.

Conference of the young specialists of the Scientific Research Plastics Institute. Plast. massy no.8:73 '60. (MIRA 13:10)
(Plastic industry)

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S/020/61/138/003/015/017
B103/B208

AUTHORS: Yermolina, A.V., Igonin, L.A., Nosova, L.A., Farberova, I.I., and Vlasova, K.N.

TITLE: Relationship between mechanical properties of crystalline polymers and their supermolecular structures

PERIODICAL: Doklady Akademii nauk SSSR, v. 138, no. 3, 1961, 614 - 615

TEXT: The authors compared some structural and mechanical properties of the industrial polyamide resin 68 (polyhexamethylene sebacic amide), from which among others slide bearings are produced and which has a high resistance to wear. They attempt to clarify the importance of the local order of the segments ("degree of crystallinity") and of the secondary supermolecular structures to the macroscopic properties of polymers. 4 x 6 x 55 mm samples were cast from the resin under pressure by means of the ЛМ-3 (LM-3) casting device, and subjected to heat treatment in inert media (silicon oils) at different temperatures and for various periods of times. The "degree of crystallinity" was determined from the integral intensities of the characteristic interferences on the intensity curve of the specimen. These curves

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Relationship between ...

were recorded on the basis of the dispersion angles of X-rays on the УРС-50- И(URS-50-I) X-ray diffractometer. The spherolite structure of the polyamide was confirmed by a microphotograph of the polished surface of the sample which has previously been etched with tricresol. The metallurgical МИМ-8 (MIM-8) microscope with a 1000-fold magnification was used for this purpose. For each series of samples the reciprocal value of wear (resistance to wear) was determined by means of the sieve-type testing machine (of the Grasseli type). The heat treatment was applied at 150 and 190°C for 15 - 30 min for each of these temperatures. The conversion of the initial samples with a hexagonal cell to the triclinic form, as described in publications, was accomplished already after heating for 15 min. Further heat treatment gradually completed the X-ray picture. It was characterized by a marked increase of the interferences (100) and (010), and, accordingly, also of the "degree of crystallinity". The second appearance of the interference of the hexagonal cell between the reflexes (100) and (010) of the triclinic cell on prolonged heating was striking. After 8 hr at 190°C and after 12 hr at 150°C the crystallinity ceased to increase. There were no recognizable structural changes observed during a heat treat-

ment of up to 30 hr. The spherolite structure of the polyamide was found to be more sensitive to a change in the method of the thermal treatment than the "degree of crystallinity". The size of the spherolites markedly increased (from 1 to 5 μ) on short heating, some structures, however, were still larger. After 8 hr heating at 190°C and after 10 hr at 150°C a gradual destruction of spherolite structures set in, and after 30 hr they could not be observed any longer on the surface of the sample. A specific correlation between the "degree of crystallinity" and resistance to wear of the plastics could not be confirmed. It may be seen from these preliminary studies that samples with a uniform size of spherolite structures (2 - 3μ) have the highest resistance to wear. It is concluded therefrom that homogeneity, size, and fine structure of the supermolecular structures play an important role in the wear of the polyamide. It is therefore of considerable interest to explain the effect of the above-mentioned structures on the mechanical properties, when studying the relationships between these properties and the structure of crystalline polymers.
The authors express their gratitude to V. A. Kargin, Academician, for discussion of the results, and S. B. Ratner for his assistance in this work.
There are 9 references: 7 Soviet-bloc and 2 non-Soviet-bloc.

Relationship between ...

The three references to English-language publications read as follows: Ref. 7: A. Keller. Proceedings of the International Conference of Crystal Growth, N. Y., 1958 ; Ref. 8: I. Sandeman, A. Keller, J. Polym. Sci., 19, 401 (1956); Ref. 9: G. Bunn, E. Garner. J. Proc. Roy. Soc., London, A 189, 39 (1947).

ASSOCIATION: Nauchno-issledovatel'skiy institut plasticheskikh mass Akademii nauk SSSR (Scientific Research Institute of Plastics of the Academy of Sciences USSR)

PRESENTED: January 6, 1961, by V. A. Kargin, Academician

SUBMITTED: December 15, 1960

Card 4/4

NOSOVA, L.A.

15.8210

S/191/62/000/009/006/012
B101/B144

AUTHORS: Farberova, I. I., Ratner, S. B., Lur'ye, Ya. G., Gurman, I. M., Ignatova, T. A., Nosova, L. A.

TITLE: Effect of some factors of composition and manufacture on the wear of plastics

PERIODICAL: Plasticheskiye massy, no. 9, 1962, 35 - 38

TEXT: The results of wear tests on plastics using emery cloth (EC) and metal gauze (MG) are given. For MG wear tests and tests with smooth steel the equation $v = v_1 P^{\alpha}$ holds mainly for the frictional wear while the EC test characterizes the purely abrasive wear. Data of wear ($mm^3/m \cdot cm^2$ at 5 kg/cm^2) at 60°C (first figure EC test, second figure MG test, third figure ...) for epoxy compounds with various fillers: ED-5 (ED-5) resin with dibutyl phthalate without filler: 48, 1.8, 3.5; with graphite: 70, 0.05, 1.8; with iron powder: 25, 0.05, 1.6. For polyvinylchloride plastics filled with asbestos, talcum or quartz an initial decrease of wear with increasing filler content is followed by an increase. The minimum of

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Effect of some factors of compoulition...

wear is explained by the limit of compatibility between filler and polymer. For polyamides, a strong reduction of wear is already achieved with low filler addition. Data for polyamide 68 (first figure EC test, second figure MC test, $mm^3/m \cdot cm^2$): without filler 0.61, 0.0025; with 5% talcum 0.64, 0.0006; with 20% talcum 0.75, 0.0014; with 40% talcum 1.10, 0.010; with 0.5% MoS_2 0.91, 0.0003; with 5% MoS_2 1.01, 0.0006. The MC test is much more sensitive than the EC test. The EC test shows the wear in polymers to be a linear function of the product of impact strength and hardness, whereas according to the MC test the wear is a linear function of the product of tensile strength and breaking elongation. There are 3 figures and 3 tables. The English-language reference is: ASTM Standards on Plastics, ASTM D1242, 56 (1957).

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ACCESSION NR: AP4009629 S/0191/64/000/001/0014/0015

AUTHORS: Vlasova, K. N.; Morozov, N. A.; Dobrokhotova, M. K.; Nosova, L. A.; Ivanova, G. P.

TITLE: Finely dispersed polyamides and antifriction coatings therefrom

SOURCE: Plasticheskiye massy*, no. 1, 1964, 14-16

TOPIC TAGS: polyamide, powder, spray coating, fluidized bed coating, antifriction coating, polyamide coated ferrous metal, polyamide coated nonferrous metal, coating property, coating

ABSTRACT: Finely dispersed polyamide powders of 100 to 300 microns can be prepared by dissolving the polyamide in caprolactam at 180-200C, cooling, and adding water to precipitate the polyamide and remove the solvent. The process can be batch or continuous. The polyamide may be applied by gas flame spray coating. Antifriction fillers such as graphite, disulfides or molybdenum may be added during spray coating as long as their particle size is less than that of the polyamide. Pigments may also be added. The coatings on

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ACCESSION NR: AP4009829

steels, aluminum and its alloys, and iron and cast iron have adhesive strengths of 400-500 kgs/cm; on nonferrous metals the adhesive strength is less. Articles of various configurations thus coated have good antifriction properties, attractive appearance, are stable to organic acids, alkali solutions and mineral oils, but do peel in aqueous media. The polyamide powders can also be applied in a fluid bed. Polycaproamide coatings on aluminum-steel bearings give significantly greater wear resistance (2 times) and abrasion resistance (20-50 times) than babbit B-83 or alloy ASM. The cost of restoring articles by coating with polyamides is 5 times less than the cost of new articles. Orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: MA, ML NR REF SOV: 002 OTHER: 005

Card 2/2

ACCESSION NR: AP4028550 S/0191/64/000/004/0033/0037

AUTHOR: Vlasova, K. N.; Rudy*k, M. A.; Nosova, L. A.; Pichugin, A. N.; Ivanova, G. P.

TITLE: Antifriction compositions based on filled polyamides

SOURCE: Plasticheskiye massy*, no. 4, 1964, 33-37

TOPIC TAGS: antifriction composition, polyamide, filled polyamide, graphite filled polyamide, talc filled polyamide, physical property, mechanical property, electrical property

ABSTRACT: The antifriction and other physical, mechanical and electric properties of filled polyamides were investigated, as well as their application in structural work. The following polyamides were tested: (T=talc, G=graphite, Mo=molybdenum disulfide, Ba=barium sulfate, numbers=% filler) Polyamide 68, 68-T20, 68-T40, 68-Mo5, 68-Ba5, Capron, K-T10, K-Mo1.5, K-Ba10, K-G10

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ACCESSION NR: AP4028550

AK-7, AK-7T10, AK-7T20, AK-7T40, AK-G5. Even small amounts of antifriction additives help form fine crystalline structures in polyamides thus improving their antifriction properties. The impact strength is lowered proportionally to the amount of filler, but polyamides have such high impact strength that even with 40% filler the strength is still 20-30 kg cm/cm^2, which exceeds that of epoxide and phenol-formaldehyde resins. The antifriction fillers increase the modulus of elasticity of polyamides as evidenced by increased rigidity and decreased deformation under load. Filled polyamides have a smaller residual deformation and elastic lag than the unfilled. The water absorption of polyamides is lowered in proportion to the filler content. The good dielectric properties of polyamides are not decreased by fillers, therefore filled polyamides can be used in the electric industry for reinforced and thin walled articles. Specifically, P-68 and 68-T10 polyamides may be used in the -60 to +100C, 10-1600 hertz ranges. AK-7T20 and 68-T30 show especially good antifriction properties and can replace nonferrous metals, their alloys and other materials, for instance in mechanical fittings in hydro installations. Their coefficient of wear is 20-35% less than that of DSP-B (a phenol-formaldehyde); the increased elasticity of the filled polyamides makes them very desirable replacements for the latter for working

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ACCESSION NR: AP4028550

surfaces, for instance in the construction of runners where the use of AK-7T20 (cemented to the metal with epoxy ED-5) reduces metal requirements and costs. The coefficients of friction for AK-7 and AK-7T20 are 19 and 61% less than for DSP-B at 500 kg /linear cm., and 6 and 20% less at 2000-2500 kg /running cm. A method was developed for preparing antifriction working surfaces on large metal articles comprising coating the cleaned and degreased metal with polyamide granules (low molecular polyamide with a small amount of epoxy resin as binder) and curing at room or elevated temperature. The work load of friction machines with polyamide surfaces may be further increased by the use of lubricants. Injection molded articles, even of complex configuration, may be made from filled polyamides. Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 00 ATD PRESS: 3050 ENCL: 00

SUB CODE: MT NO REF SOV: 002 OTHER: 001

Card 3/3

KOPELIOVICH, A.M., inzh.; NAGOVA, L.G., inzh.; ROZENGAUZ, I.N., kand. tekhn. nauk

Possibility of using cyclone steam separators in operation at low pressure. Teploenergetika 12 no.6:24-26 Je '65. (MIRA 18:9)

1. Taganrogskiy kotloturbostroitel'nyy zavod i Vsesoyuznyy nauchno-issledovatel'skiy teplotekhnicheskiy institut.

NOSOVA, L.I.

Description of the tundra and forest-tundra vegetation in the Yana-Omolloy interfluve (northern Yakutia). Bot. zhur. 49 no.5: 661-668 My '64. (MIRA 17:8)

1. Yamirskaya biologo-pochvennaya stantsiya AN Tadzhikskoy SSR, gorod Murgab.

GRIGOROV, O.N.; MOSOVA, L.M.

Comparison of methods for the determination of membrane transference numbers, the diffusion-potential and analytical methods. Uch.zap.Len. un. no.131:6-22 '49. (MLRA 9:6)
(Diffusion) (Membranes(Chemistry))

NOSOVA, L.M. ; GORODINSKIY, S.M., KARPOV, V.L, CHERNYY, M.N.

"Selection of Plastic Polymer Materials for Use in Equipment for Personal Protection". p. 24

Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii. (Voprosy Gigiyeny i Dozimetrii) Medgiz, 1957, Moscow Russian, ok.

Proceedings of the All-Union Conference on Medical Radiology (Hygienic and Dosimetric Problems).

GORODINSKIY, S.M.; NOSOVA, L.M.; PANFILOVA, Z.Ye.

Protective building covers and methods for their deactivation after radioactive pollution. Med. rad. 5 no.11:57-61 N '60. (MIRA 13:12)

(RADIATION PROTECTION) (RADIOACTIVE FALLOUT)

GORODINSKIY, S.M.; PANFILOVA, Z.Ye.; GOL'DSHTEYN, D.S.; NOSOVA, L.M.KALYUZHNAYA, T.P., red.

[Decontamination of means of individual shielding and protective coatings] Dezaktivizatsiia sredstv individual'noi zashchity i zashchitnykh pokrytii. Moskva, Atomizdat, 1964. 117 p. (MIRA 17:6)

ACCESSION NR: AT4016991 S/3057/63/000/000/0025/0034

AUTHOR: Gorodinskiy, S.M.; Karpov, V.L.; Nosova, L.M.; Panfilova, Z. Ye.; Rodionov, I.S.; Shteding, M.N.

TITLE: The development of a masticated rubber on a polyvinylchloride base for shielding against radioactive substances

SOURCE: Zashchitnyye pokrytiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 25-34

TOPIC TAGS: nuclear engineering, masticated rubber, nuclear shielding, radioactivity, polyvinylchloride polymer, radioactive shielding, radioactive contamination, residual activity, 57-40 rubber

ABSTRACT: It is pointed out that, of the industrial polymers produced at the present time, polyvinylchloride is, in terms of its inexpensiveness and mechanical and technological properties, the best material to serve as a base for shielding in nuclear engineering. The authors tested many masticated rubber materials on polyvinylchloride resin bases in terms of their sorption-desorption characteristic as a function of the type of polyvinylchloride resin, processing conditions and the presence of different components which provide for

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the required physico-mechanical and technological properties of the material. (By "sorption-desorption properties" the authors mean the ability of the material to absorb radioactivity and to be washed free of these radioactive substances through the effect of special cleansing solutions; the sorption- desorption characteristic is expressed by the residual activity of the material in percentages of the original contamination). The results of these tests are discussed. The optimal solution of the problem of developing a material to meet the specific operating requirements involved in working with radioactive substances was found in an entirely new principle of composition. This principle consists of the introduction into the composition of specially selected admixtures of hydrophobic substances which separate out on the surface of the masticated rubber in the form of a thin layer. The research conducted along these lines by the authors led to the possibility of developing on the basis of the most accessible polymer - polyvinylchloride - a new type of shielding material, called masticated rubber formula 57-40 and 80. This material is a thermoplastic and its physical and mechanical properties depend to a large degree on the temperature (its tensile strength, for example, changes with increasing temperature) and, for this reason, the formula use must be limited to a temperature interval of from 0 to 50C. The effect of the radiation dosage on the strength

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of the masticated rubber and on its elongation are discussed along with certain other specific characteristics of the material. The authors point out that formula 57-40 and 80 masticated rubber has successfully undergone tests under different conditions and is presently being widely used as a shielding material in radiochemical laboratories and at atomic power centrals. Easily deactivated and possessed of extremely high resistance to wear, this shielding material, produced in thicknesses of 2 and 3 mm, is particularly suited to continuous covering of floors and, produced in thicknesses of 0.3, 0.5 and 0.7 mm, may be utilized as a wall covering. The masticated rubber is available in colors of brown, orange, blue and white. "L.I. Kuz'mina and L.G. Danilova of the Okhtinskiy khimkombinat (Okhtinsk Chemical Works) took part in the work." Orig. art. has: 7 figures.

ASSOCIATION: none

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SUB CODE: NP	NO REF SOV: 000	OTHER: 000

Card 3/3

NOSOVA, L. M.

ACCESSION NR: AT4016994 S/3057/63/000/000/0054/0074

AUTHOR: Goradinskiy, S. M.; Panfilova, Z. Ye.; Zelenov, A. S.; Sarychev, V. S.; Ivanova, T. G.; Nosova, L. M.

TITLE: The design of protective coverings (shieldings) of formula 57-40 masticated rubber for structural elements

SOURCE: Zashchitnyye pokrytiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 54-74

TOPIC TAGS: protective shielding, radioactive shielding, masticated rubber, 57-40 rubber, rubber welding, welding RIG, radioactivity, nuclear shielding

ABSTRACT: In this detailed and extensive article, the authors describe the use of formula 57-40 masticated rubber for purposes of radioactive shielding. The article consists of two main parts: Part 1 - the shielding of floors, and Part 2 - the use of the masticated rubber for the facing of walls and stairs. The conditions of applying the rubber, the preparation of the floor surface, the preparation of the masticated rubber for welding, the actual welding of the material with high-frequency current, the use of various rigs for welding (the SPPR and the PS), the making and application by welding of flanges and crimps, high-frequency lap

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welding of rolls and sheets of masticated rubber, hot air welding of the material and, finally, carpeting are considered. In the section dealing with the lining of walls and stair flights with formula 57-40 masticated rubber, the authors give special attention to the use of the construction-assembly pistol (clamp pistol) for fastening the rubber. Two methods for the lining of walls are described and diagrammed and the entire procedure to be followed in the covering of stairs is outlined. A separate section is devoted to the problem of joining surfaces lined with the masticated rubber to metallic facings and shells. A diagram shows how this operation might best be performed. The article concludes with a discussion of the most frequently encountered welding faults (for both the high-frequency and the hot-air techniques) and how they may be eliminated, and with some remarks on weld quality control and safety regulations to be observed in work of this type. Orig. art. has: 14 figures.

ASSOCIATION: None

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SUB CODE: MF, MT NO REF SOV: 000 OTHER: 000

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ACCESSION NR: AT4017001 S/3057/63/000/000/0126/0136

AUTHOR: Gorodinskiy, S. M.; Panfilova, Z. Ye.; Spiridonov, A. D.; Nosova, L. M.; Shudrenko, N. A.

TITLE: Investigation of lacquers for shields against radioactive contamination.

SOURCE: Zashchitny*ye pokry*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 126-136

TOPIC TAGS: atomic reactor, radioactive contamination, nuclear shielding, shielding, lacquer shielding, lacquer

ABSTRACT: Lacquered materials are widely used for finishing processes in factories and technical equipment. The advantage of lacquered materials for the shielding of construction materials and technological equipment from radioactive contamination is the continuous, jointless coating of the surface during any of its configurations. The present investigation showed that the desorptive properties of lacquer coatings depend primarily on their chemical composition. Lacquers with oils and alkali-oil should not be used for surfaces contaminated by radioactive waste. It is advisable to use 1-20-61 enamels on an SVKh-40 base and commercial enamels on an SVKh-40 base with lacquer coatings. The most efficient protection of concrete against

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ACCESSION NR: AT4017001

contamination is a shielding on a base of the high-molecular epoxy resins E-40, E-41, E-49 and ET-8 (see Fig. 1 of the Enclosure). It is possible to make shielding compounds consisting of lacquer coatings which ensure easy and complete decontamination (washing away of radioactive waste). Orig. art. has: 3 figures and 4 tables.

ASSOCIATION: None

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ENCLOSURE: 01

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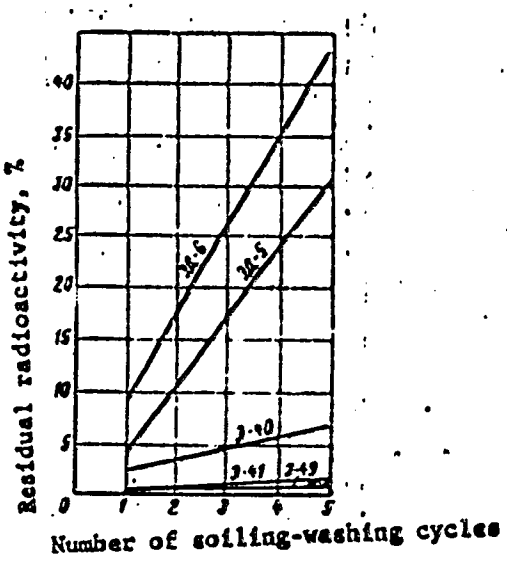

Fig. 1. Sorption-desorption features of coatings made of epoxy resins of different grades

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ACCESSION NR: AT4017008 S/3057/63/000/000/0173/0182

AUTHOR: Gorodinskiy, S. M.; Panfilova, Z. Ye.; Gol'dshteyn, D. S.; Nosova, L. M.; Fishevskaya, E. A.

TITLE: A laboratory method for the comparative estimation of the deactivation of materials contaminated by fission product isotopes

SOURCE: Zashchitny*ye pokry*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 173-182

TOPIC TAGS: radioactive element, nuclear shielding, decontamination, deactivation, fission product, radioactivity, radioactive isotope, radioactive contamination

ABSTRACT: The possibility of removing radioactive contaminants from shieldings and other anti-radiation materials is one of the most important requirements of these shieldings. The deactivation solution consists of a 2% hydrochloric acid solution containing 0.3% of either OP=7 or OP=10 soap and 0.4% sodium metaphosphate. The sodium solution reacts with the cations of many radioactive isotopes and forms water-soluble compounds. In addition, the sodium metaphosphate softens the water, improving the washing action of the solution.

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ACCESSION NR: AT4017008

Samples during the tests were first deactivated by the solution and were then washed with water. The solution was then used again, and the samples were washed and dried. When this method was insufficient a solution of 5 grams of NaOH and 1 gram of $KMnO_4$ per liter was used with the same procedure. A counter was used to determine the radioactivity before and after testing. (See Fig. 1 of the Enclosure.) Orig. art. has: 2 figures and 1 table.

ASSOCIATION: None

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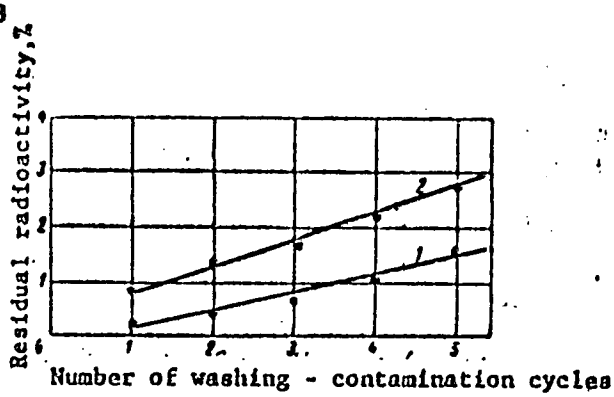

Fig. 1. Accumulation of residual radioactivity of polyvinyl chloride film during washing of the samples
1 - in cans while shaking; 2 - washing from sprayer

Card 3/3

NOSOVA, L.M.

Preserved sections of the steppes of Penza Province. Bot. zhur. 50 no.6:838-852 Je '65. (MIRA 18:7)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

NOSOVA, L.M.

Some species with disjunctive ranges in the flora of the northern (meadow) steppe of the European part of the U.S.S.R. Biul. MOIP Otd. biol. 70 no. 6:116-130 N-D '65 (MIRA 19:1)

NOSOVA, Lyubov' Nikolayevna; DITKIN, V.A., prof., otv.red.; YAKOVKIN, M.V., red.; [illegible], N.F., tekhn.red.

[Tables of Thomson (Kelvin) functions and their first derivatives] Tablitsy funktsii Tomsona i ikh pervykh proizvodnykh. Moskva, Izd-vo Akad.nauk SSSR, 1960. 422 p. (MIRA 13:10)
(Functions)

NOSOVA, L.N.; TUMARKIN, S.A.; DITKIN, V.A., prof., otv. red.; ORLOVA, I.A., red.; POPOVA, N.S., tekhn. red.

[Tables of generalized Airy functions for asymptotic solution of the differential equations $\varepsilon(py')'+(q+\varepsilon r)y=f$]Tablitsy obobshchennykh funktsii Eiri dlia asimptoticheskogo resheniia differentsial'nykh uravnenii $\varepsilon(py')'+(q+\varepsilon r)y=f$. Moskva, Vychislitel'nyi tsentr AN SSSR, 1961. 89 p. (MIRA 14:12)

(Airy functions) (Differential equations)

PRANDETSKAYA, Ye.A.; NOSOVA, L.P.

Electrodeposition of a zinc-tin alloy from pyrophosphate electrolytes. Izv. vys. ucheb. zav.; tsvet. met. 4 no.3:136-139 '61. (MIRA 15:1)

1. Krasnoyarskiy institut tsvetnykh metallov, kafedra elektrokhimii i korrozii.

(Electroforming) (Zinc-tin alloys)

NOSOVA, L.S.

Submerged cultivation of Flexner's dysentery bacteria on polysynthetic nutrient media. Mikrobiologiia 29 no.5:690-694 S-O '60.
(MIRA 13:11)

1. Gor'kovskiy nauchno-issledovatel'skiy institut epidemiologii i gigiyeny.

(SHIGELLA PARADYSENTERIAE)
(BACTERIOLOGY--CULTURES AND CULTURE MEDIA)

NOSOVA, L. S., PEROVA, R. S., (USSR)

"Metabolic Features in Deep Cultures of Typhoid and Dysentery Bacteria."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

NOSOVA, M.A.

Myocardial infarct in rheumatic heart disease. Sov.med. 22 no.1: 124-125 Ja '58. (MIRA 11:4)

1. Iz terapevticheskogo otdeleniya (nauchnyy rukovoditel' - dotsent B.M.Grinberg) Kuybyshevskoy oblastnoy bol'nitsy imeni M.I.Kalinina (glavnyy vrach M.I.Kochemazov)

(RHEUMATIC HEART DISEASE, compl.
myocardial infarct (Rus))
(MYOCARDIAL INFARCT, etiol. & pathogen.
relation to rheum. heart dis. (Rus))

NOSOVA, M.M.

Resistance of parts of ship vent lines. Prom.aerodin. no.9:113-126 '57.
(MIRA 10:12)
(Ships--Heating and ventilation)

Nosova, M.M.

14(1) PHASE I BOOK EXPLOITATION SOV/2605

Tsentral'nyy aero-gidrodinamicheskiy institut

Ventilyatory i vozdukhoprovody (Ventilators and Air Ducts) Moscow, Oborongiz, 1959. 249 p. (Series: Promyshlennaya aerodinamika, sbornik No. 12) Number of copies printed not given.

Ed. (Title page): K.A. Ushakov, Professor; Ed. (Inside book): A.S. Ginevskiy, Candidate of Technical Sciences; Ed. of Publishing House: E.A. Shekhtman; Tech. Ed.: I.M. Zudakin; Managing Ed.: A.S. Zaymovskaya, Engineer.

PURPOSE: This book is intended for engineers, technicians and scientific workers specializing in the field of industrial aerodynamics and ventilation.

COVERAGE: This collection of 14 articles deals with problems of ventilation technology. Results of experimental and theoretical investigations of the aerodynamic characteristics of axial and centrifugal fans are described. Some designs of new, highly economical centrifugal fans are presented and the drag coefficients of various ducts and elements of ventilation systems are given. No personalities are mentioned. References follow most articles.

11. Khanzhonkov, V.I. Decreasing Aerodynamic Drag With Circular Rib Openings or Recesses 181
The article explains the principle of the action of circular ribs and recesses and their optimum geometrical dimensions for which inlet drag is minimum.

12. Nosova, M.M. and N.F. Tarasov. Drag in Inlet and Exhaust Ventilation Shafts 197
The author gives the results of an experimental investigation of models of inlet and exhaust shafts of square and rectangular cross section. On the basis of this investigation, two designs were selected and are now adopted in industry. A description of these shafts is given.

13. Yudin, Ye.Ya. Experimental Investigation of a Screen-type Silencer 216
The author describes the experimental installation, explains the method of investigation and gives the results obtained. He also gives a method for applying the results obtained to acoustic calculations of units with screen silencers.

14. Khanzhonkov, V.I. Wind Protection for Open-air Sports Arenas 239
The author considers a number of designs and discusses their comparative merits under various wind conditions. Diagrams and photographs of the models investigated and graphs of wind velocities and pressure distribution are given.

AVAILABLE: Library of Congress

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NOSOVA, M.M.; KARNAKOVA, T.S.

Resistance of inlets and outlets of channels in the presence of a passing flow. Prom.aerodin. no.15:20-37 '59.
(MIRA 13:8)

(Fluid dynamics)

OKUN', Lidiya Moiseyevna;BARANOVSKIY, B.K., otv. red.; MOSOVA, M.N., red.

[TU-5-4 repeating apparatus] Transliatsionnaia apparatura TU-5-4. Moskva, Aviaz', 1965. 108 p.
(MIRA 18:9)

TSYKINA, Anna Vasil'yevna; NOSOVA, M.N., red.

[Designing of transistor amplifiers] Proektirovanie tranzistornykh usilitelei. Moskva, Sviaz', 1965. 157 p.
(MIRA 18:5)

POKRAS, Aleksandr Mikhaylovich; KORENBERG, Ye.B., otv. red.; MOSOVA, M.N, red.

[Antenna systems of foreign telecommunication lines using artificial satellites] Antennye ustroistva zarubezhnykh linii sviazi cherez iskusstvennye sputniki Zemli. Moskva, Sviaz', 1965. 167 p. (MIRA 18:8)

SAMOYLOV, Georgiy Pavlovich; SHEKHTMAN, A.M., otv. red.; NOSOV, M.N., red.

[Simple repair of television receivers; how to locate and replace faulty tubes] Prosteishii remont televizorov; kak nakhodit' i zameniat' neispravnye lampy. Izd.2., dop. Moskva, Sviaz', 1965. 188 p. (Biblioteka "Televizionnyi priem," no.18) (MIRA 18:6)

KNELLER, Il'ya Aronovich; KRUKOVETS, Faina Isaakovna; FUTTER, Natal'ya Nikolayevna; MOSKVA, M.N., red.

[Industrial interference on television screens] Industrial'nye pomekhi na ekranakh televizorov. Moskva, Sviaz', 1965. 67 p. (Biblioteka "Televizionnyi prieм," no.20) (MIRA 18:11)

GUSYATINSKIY, Igor' Aleksandrovich; RYZHKOV, Yevgeniy Vasil'yevich; NEMIROVSKIY, Aleksandr Solomonovich; MARKOV, V.V., retsenzent; LEVIN, G.A., retsenzent [deceased]; BORODICH, S.V., otv. red.; NOSOVA, M.N., red.

[Radio relay communication lines] Radiorelelnye linii sviazi. Moskva, Sviaz', 1965. 542 p. (MIRA 19:1)