"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHOVSKIY, I.

Ordering from radio amateurs. Radio no.6:11 Je '57. (MIRA 10:7)

1. Glavnyy inzhener Gosudarstvennogo soyuznogo mashinostroitel'nogo zavoda imeni 15-letiya Leninskogo kommunisticheskogo soyuza molodeshi Ukrainy.

(Radio--Apparatus and supplies)

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RAKHOVSKIY, I.

107-57-6-16/57

AUTHOR: Rakhovskiy, I., Chief engineer of a factory.

TITLE: Our Order to Radio Amateurs. Search, dare, create! (Nash zakaz radiolyubitelyam. Ishchite, derzayte, tvorite.)

PERIODICAL: Radio, 1957, Nr 6, p 11 (USSR)

ABSTRACT: The Gosudarstvennyy soyuznyy mashinostroitel'nyy zavod imeni 15-letiya LKSMU (the state machine building factory imeni 15 years of the LKSMU, Stalino) has begun to introduce electronic devices for automation of mine hoists and remote control of the hoist machines and winches. Electronic devices are also used for an experimental investigation of the work of hoisting machines, for determination of mechanical stresses in various parts of the machine, for determination of characteristics of brakes, etc. Radio amateurs could render a great service to the factory by developing devices for measuring cable strain during the work of a hoisting machine. Also, an instrument for measuring cable travel speed is needed. Also, these instruments are needed: a device for measuring the speed and acceleration of travel of the cage; a device indicating position of the cage in the shaft; a radio communication system between the cage and the hoisting machine building. Address is given for submitting suggestions.

AVAILABLE: Library of Congress

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RAKHOVSKIY, N. A.

"Biochemical Modifications in the Cereals Affected with the Virus of Winter Wheat Mosaic," Dok. AN, 30, No. 7, 1941. Kbr., Ramon Breeding Station, Voronezh Province, -1941-.

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ACCESSION NR: AP4031450

(1) Powdered-metal-faced contacts are less liable to erosion than the earlier W-welded-on contacts; (2) The new-design contacts can break currents up to 2,000 amp at 2 kv (max interrupted current was 3,400 amp); the average arcing time was 10 millisec with currents up to 2,000 amp; (3) With currents of 2,000-3,000 amp, the arc voltage drop was 140-300 v; (4) The W-Ni-Co contacts can be recommended for vacuum circuit-breakers up to 2,000 amp, 3-10 kv, without additional arc-suppressing devices. Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: EE NO REF SOV: 008 OTHER: 006

Card 2/2

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

L 19012-65 EPA(s)-2/EWT(m)/EPF(n)-2/EWA(d)/EPA(w)-2/T/EWP(t)/EWP(b) Pt-10/
Pu-4/Pab-10 AFWL/SSD/AEDC(b)/IJP(c) RWH/JD/WW/JG/WB

ACCESSION NR: AP4049051 S/0057/64/034/011/2072/2078

AUTHOR: Rakhovskiy, V.I.

TITLE: Investigation of the erosion of refractory electrodes in a high-current vacuum arc discharge

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.11, 1964, 2072-2078

TOPIC TAGS: circuit breaker, tungsten contact, vacuum arc, vacuum switch, erosion

ABSTRACT: The erosion rates of metal from the tungsten electrodes of a vacuum circuit breaker were measured separately for the circuit breaking process as a whole, and for the early stage in which the current is carried by a molten metal bridge. The measurements were performed by weighing the metal deposited on plastic probes mounted near the electrodes within the vacuum chamber. The breaker was operated many times between weighings, and it was assumed that the eroded material was ejected uniformly in all directions. The circuit breaker was shorted by a thyrotron which could be triggered when the potential rose to 3.5-4 V. When the thyrotron was employed, the discharge was thus quenched as soon as the metal bridge between the electrodes was destroyed and before the arc had burned for an appreciable time.

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L 19012-65

ACCESSION NR: AP4049051

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The electrode separation rate is not given, but it was such that when a current of 183 A was broken the metal bridge was destroyed after 1.9 millisec and the duration of the whole process was 35 millisec. The erosion rate in the early stage of the process, preceding and including the destruction of the metal bridge, was found to be smaller by a factor 2 or 3 than in the later stage when the current was carried by a vacuum arc. Thus, all but a few percent of the eroded metal was ejected during the arc stage. The erosion rate increased exponentially with the current over the investigated range from 100 to 1000 A. This exponential relation (with the laboratory values of the parameters) was found approximately to apply to commercial vacuum circuit breakers in service. From the exponential relation between erosion and current it is concluded that the material is ejected in the vapor phase from the electrode hot spots, and that the spots increase in temperature but not greatly in size with increasing current. The vaporization of the eroded material is confirmed by the absence of structure or local inclusions in the deposit on the probes. "In conclusion, I consider it my duty to express my gratitude to V.L.Granovskiy (Deceased) and V.S.Potokin for their interest in the work and participation in a discussion of the results, and to M.A.Tyulina for assistance in adjusting the control system." Orig.art.has: 5 formulas, 6 figures and 2 tables.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

L 19012-6

ACCESSION NR: AP4045061

ASSOCIATION: Vsesoyuzny*y elektrotekhnicheskiy institut im.V.I.Lenina (All-Union Electric Engineering Institute)

SUBMITTED: 27Feb64 ENCL: 00

SUB CODE: EE,EM NR REF SOV:003 OTHER: 011

3/3

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LEVCHENKO, G.V., inzh.; RAKHOVSKIY, V.I., kand.tekhn.nauk

Heavy-current metalloceramic power contactors for vacuum switches.
Elektrotekhnika 35 no.4:16-18 Ap '64. (MIRA 17:4)

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[illegible], G.V., inzh.; [illegible]V, [illegible], kand. [illegible] nauk; [illegible], V.I., kand. tekhn. nauk; [illegible], [illegible], kand. tekhn. nauk

Choice of metalloceramic material for [illegible] operating in a vacuum. Elektrotekhnika 35 no.5:52-53 My'64 [illegible] (MIRA [illegible])

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

L 13444-66 EWT(1)/EWT(m)/ETC(F)/EPF(n)-2/EWG(m)/T/EWP(t)/EWP(b) IJP(c)

ACC NR: AP6002449 JD/WW/JG/AT SOURCE CODE: UR/0057/65/035/012/2228/2231

AUTHOR: Rakhovskiy, V.I.

ORG: All-Union Order of Lenin Electrotechnical Institute im. V.I.Lenin (Vsesoyuznyy ordena Lenina elektrotekhnicheskiy institut)

TITLE: Emission mechanism of an arc discharge cathode

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 12, 1965, 2228-2231

TOPIC TAGS: arc discharge, electrode, electron emission, vaporization, conduction band, electric field

ABSTRACT: The purpose of the present "brief communication" is to retrieve from the oblivion into which it has fallen and present for renewed discussion the hypothesis of J.Rothstein (Phys. Rev., 73, 1214, 1948) that over the cathode spot on an arc discharge cathode of easily fusible and vaporizable metal (e.g. of Hg, Ag, or Cu) there forms a thin layer of very dense metal vapor in which metallic conduction takes place. Calculations show that at ion current densities of the order of those assumed in the field emission theory the cathode will be in a continuous state of thermal disruption. It is therefore illogical to employ under these circumstances values of the work function, surface temperature, heat conductivity, and other quantities that have meaning only for a solid or liquid cathode. Experimental results are cited that tend to indicate the presence of dense vapor in the vicinity of the arc cathode and the

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ACC NR: AP6002449

possibility of metallic conduction in such vapors. The layer of dense metallic vapor can act as a sort of pump to remove electrons from the cathode; owing to the high temperature, electrons entering the vapor from the solid cathode by metallic conduction will occupy levels considerably above the Fermi surface, and from these levels they can be drawn into the arc column by the temperature - field mechanism of T.H.Lee (J.Appl.Phys., 28, 920, 1957; 30, 166, 1959). Nonuniformities of the boundary between the dense metallic vapor and the arc column may also play a significant role by giving rise to local regions of increased electric field strength. The author thanks Professor L.A.Sena for his interest and for discussing the results. Orig. art. has: 2 formulas.

SUB CODE: 20 SUBM DATE: 14May65 ORIG.REF: 003 OTH REF: 011

Card 2/2

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[illegible], [illegible]

33523

Ob Obnoy Transmissiv- Noy Vspyshke Tulyaremii, Sbornik Nauch. Rabot (Ryaz. Obl. Otd. Zdravookhraneniya), Vyp. 2, 1949, c. 119-23

SO: Letopis' Zhurnal'nykh Statey, Vol. 45, Maskva, 1949

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RAKHOVSKIY, V.I.

Laboratory instruments at the Exhibition of the Achievements of the National Economy. Zav.lab. 26 no.6:774-776 '60. (MIRA 13:7)

(Scientific apparatus and instruments--Exhibitions)

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

S/032/60/026/009/017/018
B015/B058

AUTHOR: Rakhovskiy, V. I.

TITLE: Laboratory Instruments at the Exposition of the Achievements of National Economy

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 9, pp. 1156 - 1161

TEXT: In continuation of a previous paper (Ref. 1), a report is given concerning instruments for physical investigation methods, which were shown at the Exposition mentioned in the title. A short description with the most important data, as well as of the pavilion where the instruments were exhibited, is given. The following apparatus are mentioned: A scintillation counter of the type РС-2 (RS-2), designed at the Moskovskiy inzhenerno-fizicheskiy institut (Moscow Engineering and Physics Institute), in which the impulse counting is done with instruments of the type ПС-10000 (PS-10000), "Bambuk", and ЭПП-09 (EPP-09) potentiometer (Pavilion of the Vysshaya shkola (College)); a universal long-wave X-ray spectrometer of the type "АРУС-4" ("DRUS-4") (Fig. 1), designed

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Laboratory Instruments at the Exposition of the Achievements of National Economy

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B015/B058

at the Rostovskiy gosudarstvennyy universitet (Rostov State University); a short-wave X-ray fluorescence spectrometer, designed at Rostov State University; an instrument for the X-ray spectral analysis of materials in microvolumes designed at the Institut metallurgii AN SSSR (Institute of Metallurgy of the AS USSR); a ДФС-12 (DFS-12) spectrometer for the spectrum 3600-6400 A and a ДФС-13 (DFS-13) spectrometer for the spectrum of from 2000-10,000 A (Pavilion "Mashinostroyeniye" (Machine Construction)); an instrument for the spectral determination of the hydrogen content in metals, designed at the Leningradskiy gosudarstvennyy universitet (Leningrad State University), as well as an instrument for the spectral determination of small concentrations of impurities and an automatic spectral instrument for continuous analysis of gases; refractometer of the type ИТР-1 (ITR-1), ИТР-2 (ITR-2); and ИФР-23 (IFR-23) (Fig. 2); a circular polarimeter of the type "СМ" ("SM"); an automatic photoelectronic color-pyrometer of the type ЦЭП-3 (TsEP-3) (Fig. 3), in which an EPP-09 potentiometer is used and temperatures of from 1400° to 2800°C may be measured (Pavilion of the Akademiya nauk SSSR (Academy of Sciences USSR)); a portable pyrometer of the type ОППИР-55 (OPPIR-55); a photometer for low intensities of the type ВФМ-57 (VFM-57); a microscope

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Laboratory Instruments at the Exposition of the Achievements of National Economy

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of the type МИМ-8м (MIM-8m) with a Кф-3 (KF-3) addition; the eyepiece attachments to the microscopes: the РА-4 (RA-4) drafting machine, the АМ9-2 (AM9-2) eyepiece screw-thread micrometer and the microphoto attachments of the type МФН-1 (MFN-1) and МФН-3 (MFN-3); the instrument of the type ФМН-2 (FMN-2) intended for photographing microobjects at slight magnification; the МИМ-8 (MIM-8) microscope for investigations in transmitted polarized light; the horizontal МГ-1 (MG-1) microscope; an electromagnetic inductive instrument for the determination of material defects of the type ЭМИД-2 (EMID-2) for quality control and of the type ЭМИД-3 (EMID-3) for hardness tests, an ЭО-7 (EO-7) oscilloscope serving as indicator for the latter, developed at the Eksperimental'nyy nauchno-issledovatel'skiy institut podshipnikovoy promyshlennosti (Experimental Scientific Research Institute of the Ball Bearing Industry); a universal magnetic instrument for the determination of material defects of the type УМД-9000 (UMD-9000); a magnetographic instrument for the determination of material defects of the type ВУМД-7 (VUMD-7) for controlling welded joints, designed at the Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov (All-Union Scientific Research Institute for the Construction of Main Pipe Lines); a gamma

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Laboratory Instruments at the Exposition of the Achievements of National Economy

S/032/60/026/009/017/018
B015/B058

ray instrument for the industrial fluoroscopy of the type ГУП-Co-60-1 (GUP-So-60-1) ("Atomnaya energiya" Pavilion ("Atomic Power")); a sliding X-ray apparatus of the type РУП-200-20-5 (RUP-200-20-5) produced at the zavod "Mosrentgen" ("Mosrentgen" Plant); a betatron of the type Б-30 (B-30) designed at the Tomskiy politekhnicheskiy institut (Tomsk Polytechnic Institute); an electroinductive thickness gauge of the type ТПН-1 (TPN-1); a thickness gauge of the type Р-4 (R-4) for controlling the wall thickness of tubes using gamma rays; a contactless thickness gauge of the type ИТУ-495 (ITU-495) for rolled sheets, based on beta-ray absorption; counters of the type ПС-10000 (PS-10000) and ПС-10^6 (PS-10^6) for counting alpha-beta-gamma radiation; a work-table of the type РМС-1 (RMS-1) for work with radioactive substances (Fig. 4); a "biocurrent manipulator" designed by the Institut mashinovedeniya AN SSSR (Institute of Engineering of the AS USSR) and Nauchno-issledovatel'skiy institut protezirovaniya i protezostroyeniya (Scientific Research Institute for Artificial Limb Design); an automatic electronic rotary viscosimeter designed at the Groznenskiy neftyanoy institut (Groznyy Petroleum Institute); the ВА-56 (VA-56) "viscograph" (Pavilion of the

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Laboratory Instruments at the Exposition of the Achievements of National Economy

S/032/60/026/009/017/018
B015/B058

Petroleum Industry); a rotary "plastoviscosimeter" of the type ПВР-1 (PVR-1) designed at the zavod kontrol'no-izmeritel'nykh priborov Mosgorsovnarkhoza (Plant for Control and Measuring Instruments of the Mosgorsovnarkhoz). There are 4 figures and 4 Soviet references.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

S/032/60/026/011/035/035
B004/B067

AUTHOR: Rakhovskiy, V. I.

TITLE: Laboratory Devices on Show at the Exhibition of National Economy

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 11, pp. 1324-1326

TEXT: The following devices which are on show at the Vystavka dostizheniy narodnogo khozyaystva SSSR (Exhibition of the Achievements of Soviet Economy) are briefly described: Ultrahigh-speed photorecording device СФР-2 (SFR-2) for the study of rapid processes (up to 10^{-8} sec), high-speed camera СКС-1 (SKS-1) up to 8000 frames/sec, differential magnetic device ЭНИИПП-58В (ENIIPP-58V) of the Eksperimental'nyy nauchno-issledovatel'skiy institut podshipnikovoy promyshlennosti (Experimental Scientific Research Institute of the Bearing Industry) for controlling rings of ball bearings and for determining the austenite content. Device УЭ-1 (UE-1) for controlling conductivity. Radioactive density meter ПЖР-2 (PZhR-2) for continuous measurement and recording of various fluids constructed by the "Kaluganribor" works. Apparatus УИТ-1 (UIT-1) constructed at the MGU (Moscow State University) for determining the surface

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Laboratory Devices on Show at the Exhibition of National Economy S/032/60/026/011/035/035 B004/B067

structure by etching with ionic bombardment. Universal corrosion measurement apparatus УКИП-56 (UKIP-56) designed by VNIIST, produced at the Moskovskiy opytnyy zavod Mosgorsovnarkhoza (Moscow Experimental Plant of the Moscow Municipal sovnarkhoz) for controlling pipelines. Electronic recorder and controller МС1 (MS1), МСР1 (MSR1), ПС1 (PS1), ПСР1 (PSR1), ДС1 (DS1), and ДСР1 (DSR1) for measuring, controlling, and recording temperature, consumption of gas, liquids, and vapors, as well as of liquid levels. The P-apparatus are potentiometers, the M-apparatus are measuring bridges, and the D-apparatus are induction apparatus. The letter R indicates that the apparatus is equipped with a control device. Electronic millisecond meters МСК-2 (MSK-2) developed by the "Fizpribor" works together with the Institut fiziki AN SSSR (Institute of Physics of the AS USSR); machine МУИ-600 (MUI-600) of the zavod po proizvodstvu priborov dlya ispytaniya metallov (Works for the Production of Metal Testing Apparatus) at Ivanovo for fatigue bending tests. Automatic rapid hardness gage ТКМ (TKM) with diamond cone for automatic hardness test. The apparatus for testing metals for abrasion constructed at the Moskovskiy institut khimicheskogo mashinostroyeniya (Moscow Institute of Chemical Machine Building) is also provided with a diamond cone sliding over the sample, with the penetration depth being recorded by an oscilloscope. There is 1 figure.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

S/032/61/027/004/027/028
B103/B201

AUTHOR: Rakhovskiy, V. I.

TITLE: Laboratory instruments at the Exposition of Achievements of National Economy

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 4, 1961, 494-498

TEXT: The VDNKh (Exposition of Achievements of National Economy) of 1960 has put on exhibit new testing and measuring instruments for use in laboratories, a part of which is already being mass-produced by the USSR industry. Instruments for chemical and spectroscopic analysis. Automatic industrial chromatograph for gas flows ХПА-2 (KhPA-2), jointly developed by SKB-ANN (Special Design Office-ANN) and VNII NP (All-Union Scientific Research Institute for the Processing of Petroleum and Gas and for the Production of Synthetic Liquid Fuel). Results have been recorded by an ЭПП-09 (EPP-09) recorder. Transportable chromatograph ХГ-4 (KhG-4) for gases. Ultrachemiscope УИ-1 (UI-1) for the analysis of substances, chromatography and titration. Visual colorimeter КМ-1 (KM-1) for disperse daylight or daylight lamp (БС-15 (BS-15)). Photoelectric

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colorimeter-nephelometer ФЭК-56 (FEK-56) for determining concentrations with antimony-cesium photocells СЦВ-6 (STsV-6), incandescent lamp СЦ-98 (STs-98) and high-pressure lamp СВД-120А (SVD-120A). Photoelectric flame photometer ФПФ-58 (FPF-58) for the analysis of alkaline solutions. Visual photoelectric photometer ФМ-58 (FM-58). Spectrophotometer СФД-1 (SFD-1), spectroprojector СПП-1 (SPP-1). Recording microphotometer with selenium photocell. Condensed spark generator ГИ-3 (GI-3) for the excitation of emission spectra. Devices for studying the structure of metals. Photoelectron microscope ЭМ-6 (EM-6) with electromagnetic and light optics. Electron microscope ЭМ-5 (EM-5) with electron microscopic "vacuum unit" (vakuumnyy post) ЭВ-12 (EV-12) for the production of preparations. Stereoscopic microphoto attachment МФН-5 (MFN-5) for use with stereoscopic microscopes МБС-1 (MBS-1) and МБС-2 (MBS-2) in top illumination and transillumination photography. The attachment is equipped with a film photocamera of the type "Зенит" ("Zenit"). Temperature gauges. Photoelectric pyrometer ФЭП-4 (FEP-4) for temperatures from 500 to 4500°C. Radiation pyrometer "Рапир-2" ("Rapir-2"), worked out by GSKB (State Special Design Bureau) of the Gosudarstvennyy Komitet po avtomatizatsii i mashinostroyeniyu (State Committee on

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Automation and Machine Construction) for the range from 20 to 500°C on the basis of surface radiation. Platinum leaf-like (lepestkovyy) resistance thermometer ЭТП-561 (ETP-561) for liquids and gases up to 500°C. A temperature gauge using a thermistor МТ-54 (MT-54) has been worked out at the Tomskiy inzhenerno-stroitel'nyy institut (Tomsk Institute of Construction Engineering), and measures temperatures from 11 to 39°C with an accuracy of 0.05°C. Instruments for nondestructive control. Transportable automatic gamma apparatus ГУП-А-2М (GUP-A-2M) for the radioscopy of welded seams in metal structures. Scintillation counter for gamma defectoscopy, worked out at the TsNIITMASh (Central Scientific Research Institute of Technology and Machinery) for the defectoscopy of 0.05 to 1.5 m thicknesses and when cooling the receiver at temperatures up to 1000°C. Acoustic impedance defectoscope ИКС (IKS) for exposing the lacking adhesion between the coating and the remaining part of the product. Pulsed ultrasonic defectoscope УДМ-1 (UDM-1) for determining the coordinates of defects of the totality at depths from 5 to 2.5 mm in large metal pieces, such as semifinished materials and products. Ultrasonic defectoscope УЗДЛ-61 (UZDL-61) for detecting surface cracks on workpieces of complicated shapes. Electromagnetic

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inductive defectoscope БИЭК-59 (BIEK-59) for controlling the quality of the heat treatment (tempering) and for sorting out annular semifinished material and workpieces according to steel types by way of the contactless measurement of the electrical conductivity. Electromagnetic defectoscope of the type МД-138 (MD-138) for the quality control of welded joints of low-carbon and low-alloyed steels 5 to 30 mm thick. Semiautomatic magnetic defectoscope МДГ-1 (MDP-1) for detecting fissures, extremely fine cracks, and other defects in the surface layer of steel products. It makes use of the magnetic powder method. Luminescence defectoscope ЛД-2 (LD-2) serves for controlling nonmagnetic material and is not transportable. Auxiliary facilities are a quartz lamp ПРК-7 (PRK-7) as ultraviolet radiation source, and irradiation device with a mercury-quartz lamp ПРК-4 (PRK-4). Coercimeter with attached electromagnets and "ferrosounding" (ferrozondovyy) indicators for studying the thermal and the chemothermal treatment of steel products. Worked out by the Institut fiziki metallov AN SSSR (Institute of Metal Physics AS USSR). Devices for the automatic control based on physical characteristics. Device ИС-3А (IS-3A) for the control of physico-chemical processes in laboratories and in the industry. It works with ultrasonics.

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S/032/61/027/004/027/028
B103/B201

Laboratory instruments at the ...

Device УЗИ-6 (UZI-6) for the same purpose. Transportable electroviscosimeter of the type ЭВИ-57П (EVI-57P), developed at the Gor'kovskiy issledovatel'skiy fiziko-tekhnicheskiy institut (Gor'kiy Research Institute of Physics and Technology) serves for rapid measurements of the viscosity of liquids at working temperatures directly in reaction vessels, soaking tanks, or tubs. Five measurement ranges allow measurements to be made between 0.5 and 100 centipoises within 5-6 seconds at a minimum volume of the liquid of 650 ml. There are 4 figures.

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RAKHOVSKIY, V.I.

Exhibitions of foreign instruments for scientific investigations. Zav.lab. 28 no.1:122-125 '62. (MIRA 15:2)

(Scientific apparatus and instruments--Exhibitions)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

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RAKHOVSKIY, V.I.

Laboratory apparatus and instruments at the French National Exhibition. Zav.lab. 28 no.3:385-388 '62. (MIRA 15:4)
(France--Scientific apparatus and instruments)
(Moscow--Exhibitions)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

AUTHOR: Lyubimov, A. P., Zobens, V. Ya., Rakhovskiy, V. I. SOV/76-32-8-12/37

TITLE: A Mass-Spectrometric Determination of the Thermodynamic Properties of Binary Metallic Systems (Opredeleniye termodinamicheskikh kharakteristik metallicheskikh dvoynykh sistem pri pomoshchi mass-spektrometra)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 8, pp. 1804-1808 (USSR)

ABSTRACT: A method for the determination of the partial pressures of vapors based on an evaporation and a subsequent analysis of the gaseous phase is employed. An apparatus of the type MS-1 served for the mass-spectrometric measurements. It had to be improved in some respects, as e.g. by a focusing of the ion beam, the avoiding of a contact between the material to be investigated and the heating element, and others. A diagram of the apparatus as well as a description and the technique employed are given. The systems Fe - Ni and Fe - Co were investigated at 1463°, 1583° and 1703°K, with the isotopes Fe^{56}_{26}, Co^{59}_{27} and Ni^{58}_{28} being used for the measurements.

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A Mass-Spectrometric Determination of the Thermodynamic Properties of Binary Metallic Systems SOV/76-32-8-12/37

The determination of the partial vapor pressures was carried out by means of the Gibbs-Duhem (Gibbs-Dyugem) equation; the values of the thermodynamic activities, of the activity coefficients as well as of the partial molar free energies are given in a table. It was found that the two systems agree well with the Raoult's (Rault) theorem and thus are close to the ideal case. At a concentration of 80 % nickel there is, however, a deviation from the ideal case, which fact is explained by the presence of "residues" of a superstructure Ni_3Fe.

There are 2 figures, 6 tables, and 4 references, 2 of which are Soviet.

ASSOCIATION: Institut stali im. I.V. Stalina Moskva (Institute of Steel imeni I.V. Stalin, Moscow)

SUBMITTED: March 12, 1957

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

S/020/60/135/004/033/037
B004/B056

AUTHORS: Rakhovskiy, V. I., Lyubimov, A. P., and Garmash, V. M.

TITLE: Penetration of Silver Into Tungsten

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 4, pp. 906 - 908

TEXT: The authors discuss the problem of the strength of power current terminals. Since a high melting point and good thermal conductivity are desirable for such contacts, repeated attempts have been made to use alloys on the base of silver and tungsten. In this connection, penetration of Ag into W plays an important role. Tungsten plates (0.015x0.4x1.2 cm) were annealed in liquid silver containing radioactive Ag^{110}. The quartz crucible with the sample was placed in a tube which was evacuated to 10^{-4} mm Hg filled with He up to somewhat over 1 atm, and annealed at 1000° C for 8, 16, and 24 hours, and at 1080° C for 4, 8, 12, and 16 hours. Temperature was controlled by a chromel-alumel thermocouple and a ПВТВ-1

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Penetration of Silver Into Tungsten

S/020/60/135/004/033/037
B004/B056

(PPTV-1) potentiometer, and regulated by an ЛАТР-1 (LATR-1) type autotransformer. Then, the tungsten plate was extracted from the liquid Ag, adhering Ag was etched away by means of dilute HNO_3 at 40° C in a ТС-15М (TS-15m) type thermostat, and the activity of W was determined by ВСП (VSP) counter. At both temperatures, a linear increase in activity with the annealing time was observed. From this it was concluded that it is not diffusion which takes place but another penetration process whose rate was constant and equal to $7.62 \cdot 10^{-8}$ g/cm^2·sec at 1080° C. The activation energy of this process was 825 kcal/g-atom. The observed sharp decrease in strength of tungsten indicated that liquid silver etches away the grain boundaries of tungsten, and that silver atoms fill the "pores". According to experimental data, such a process would depend linearly on time. There are 2 figures and 3 references: 1 Soviet and 2 German.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

Penetration of Silver Into Tungsten

S/020/60/135/004/033/037
B004/B056

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin), Moskovskiy institut stali im. I. V. Stalina (Moscow Steel Institute imeni I. V. Stalin)

PRESENTED: June 22, 1960 by P. A. Rebinder, Academician

SUBMITTED: June 14, 1960

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

S/137/62/000/004/042/201
A006/A101

15.2400

AUTHORS: Lyubimov, A.P.; Garmash, V.M.; Rakhovskiy, V.I.

TITLE: Investigating the heat capacity of tungsten and copper-base cermet compounds

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 41, abstract 4G269 ("Poroshk. Metallurgiya", 1961, no. 5, 20 - 26, English summary)

TEXT: A radiation calorimeter was used to measure the heat capacity of Cu-W compounds during the cooling process. The specimens were heated in a vacuum (about 10^{-6} mm Hg) to 850 - 900°C (sintering in the solid phase) and to 1,150 - 1,250°C (sintering in the liquid phase); they were held at these temperatures for 15 min and cooled at a rate of 0.75 - 1.5 degrees/sec. In the case of Cu and Cu-W the "heat capacity-temperature" curves showed a number of maxima after sintering, whose appearance is connected with defects in the crystal lattice of the powders. An anomalous behavior was also observed in compounds W +25% Cu, sintered at 1,150 - 1,250°C (heat capacity maxima were located at 410, 660, 910°C).

[Abstracter's note: Complete translation] R. Andriyevskiy

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LYUBIMOV, A.P.; GARTASH, V.M.; RAKHOVSKIY, V.I.

Investigating the heat capacity of tungsten and copper-base ceramic metal compositions. Porosh. met. 1 no.5:20-25 S-O '61. (MIRA 15:6)

1. Moskovskiy institut stali imeni I.V. Stalina i Vsesoyuznyy elektrotekhnicheskiy institut imeni Lenina.
(Powder metals. Thermal properties)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

L 18145-63 EWT(1)/EWP(q)/EWT(m)/BDS/ES(w)-2 AFFTC/ASD/ESD-3/IJP(C)/SSD
ACCESSION NR: AP3004501 Pab-4 JD S/0048/63/027/008/1060/1064

72
69

AUTHOR: Lyubimov,A.P.; Pavlov,S.E.; Rakhovskiy,V.I.; Zaytseva,N.G.

21

TITLE: Procedure for measuring the ionization cross sections and ionization coefficients of metal atoms /Report presented at the Second All-Union Conference on the Physics of Electronic and Atomic Collisions held in Uzhgorod 2-9 Oct 1962/

III

SOURCE: AN SSSR, Izvestiya, ser.fiz.,v.27, no.8, 1963, 1060-1064

TOPIC TAGS: ionization cross section , ionization coefficient , electron impact, Ag

ABSTRACT: Owing to the lack of reliable techniques for determining the ionization cross sections for metal ions - witness the minor number of experimental studies in the field - the present work was undertaken in order to develop a simple procedure for measuring ionization cross sections and ionization coefficients in electron impact. The basic experimental arrangement is diagramed in Fig.1 of the Enclosure. The atomic beam 1 of the investigated substance is ionized by the monoenergetic electron beam 2, perpendicular to it. The ions 3 formed as a result of impact are gathered by the collector 4. The ion current is amplified and measured by the electrometric amplifier 5. At the same time the non-ionized atoms also arrive at the

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

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ACCESSION NR: AP3004501

collector 4 and are condensed on it; the amount of the condensate is determined by weighing, chemical analysis or from the radioactivity if tagged atoms are used. The total ionization coefficient is equal to the ratio of ionized to non-ionized atoms. Straightforward equations for calculating ionization coefficients and ionization cross sections for N-fold ionization are derived in the paper. The actual experimental tube is diagramed and described, and a photograph of a circular collector with a deposit is reproduced. Silver was chosen for the trial experiments for the following reasons: Ag has a sufficiently high vapor pressure at the realizable temperature (1300°K); it can readily be obtained in 99.99% pure form and is easily outgassed; it does not react with the crucible material; there exists the isotope Ag^{110} with a period of 225 days and conveniently detected β and γ radiations. Two experiments yielded values of 2.08×10^{-16} and 1.73×10^{-16} for the ionization cross section, and 1.05×10^{-8} and 0.94×10^{-8} for the ionization coefficient (accelerating potential 19 V, T = 980 and 1030°C, respectively); these values agree within 40% with the results of calculations by the formulas of Tompson and H.W.Drawin (Z.Physik,164, 513, 1961). The proposed procedure is deemed useful, but some suggestions for further improvements are made. "In conclusion, the authors express their gratitude to Z.I.Sinitsina for assistance in preparing the apparatus." Orig. art. has: 9 formulas, 3 figures and 1 table.

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

L 18145-63
ACCESSION NR: AP3004501

ASSOCIATION: Vsesoyuzni*y elektrotekhnicheskiy institut im. V.I.Lenina (All-Union Electrical Engineering Institute)

SUBMITTED: 00 DATE ACQ: 26Aug63 ENCL: 01

SUB CODE: PH, SD NO REF SOV: 002 OTHER: 006

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHOVSKIY, V. I.

"The Investigation of Non-stationary Thermal Regime of Contacts at Heavy Current In vacuum."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHOVSKIY, V. I.

"Investigation of a non-stationary temperature regime of high-current contracts in a vacuum."

Report presented at the 1st All-Union Conference on Heat- and Mass- Exchange, Minsk, BSSR, 5-9 June 1961

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

POPOV, N.A.; RAKHOVSKIY, V.I.

Possibility of using ceramic metal contacts in vacuum switches. Porosh. met. no.4:103-106 Jl-Ag '61. (MIRA 16:5)

1. Vsesoyuznyy ordena Lenina elektrotekhnicheskiy institut imeni V.I.Lenina.
(Ceramic metals) (Electric contactors)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHOVSKIY, V.I.

Formation of an arc on contactors following the disconnecting of large currents. Porosh.met. 2 no.1:45-49 Ja-F '62. (MIRA 15:8)

1. Vsesoyuznyy elektrotekhnicheskiy institut imeni V.I.Lenina.
(Electric arc)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHOVSKIY, V.I.

Investigating thermal conditions of contacts on vacuum switches. Porosh. met. 2 no.2:92-98 Mr-Ap '62. (MIRA 16:5)

1. Vsesoyuznyy elektrotekhnicheskiy institut imeni V.I.Lenina.
(Electric contactors--Thermal properties)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

PAVLOV, S.I.; RAKHOVSKIY, V.I.

Developing a radio-frequency mass spectrograph with parabolic potential distribution. Izm.tekh. no.7:50-51 Jl '62. (MIRA 15:6)
(Mass spectrometry--Equipment and supplies)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

L 54008-65 EWT(1)/EPF(c)/T/EPA(w)-2/EWA(m)-2 Pab-10/Pr-4 IJP(c)

ACCESSION NR: AP5013379 UR/0207/65/000/002/0094/0096

50
47
B

AUTHORS: Beylina, G. M. (Moscow); Pavlov, S. I. (Moscow); Rakhovskiy, V. I. (Moscow); Sorokaletov, O. D.

21

TITLE: Measuring ionization function of metal atoms by electron impact

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1965, 94-96

TOPIC TAGS: electron impact, ionization, electron beam, atomic beam, ionization cross section/ U1 2 amplifier, ENO 1(S 1 4) oscillograph, MA 20 balance

ABSTRACT: A method is described for measuring the absolute ionization cross section of low vapor pressure metal atoms by electron impact. The apparatus used for this experiment is shown in Fig. 1 on the Enclosure where 1- neutral atom source, 2- atomic beam chopper, 3- electron beam, 4- neutral atom collector, 5- ion collector, 6- thermopile, 7- cooled collector for neutral atoms, 8- LM-2. The metal used was lead. An electrostatic selector was employed to make the electron beam monoenergetic. This was done successfully to within 0.35 ev electron energy. The ion current was measured by an electrometric amplifier U1-2 with an error of less than 8%. The ionization measurements were carried out from the threshold level up to 150 ev with a maximum ionization cross section of

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L 54008-65

ACCESSION NR: AP5013379

3

8×10^{-13} cm^2 at 55 ev. The ionization cross section was determined from the expression $Q = I_+ mtbv/I_- M$ where b is the atom beam width at the point of intersection with the electron beam, t is the evaporation time and m is the atomic mass. A special effort was made to measure the neutral atom concentration accurately, condensing them on a collector cooled by liquid nitrogen. "The authors express their deep gratitude to V. L. Granovskiy (deceased) for his help and advice. Thanks are also given to Z. I. Sinitsina and A. A. Mal'kov for preparing the apparatus." Orig. art. has: 3 figures and 1 equation.

ASSOCIATION: none

SUBMITTED: 29Oct64 ENCL: 01 SUB CODE: NP, MM

NO REF SOV: 003 OTHER: 008

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

L 54008-65

ACCESSION NR: AP5013379

ENCLOSURE: 01

0

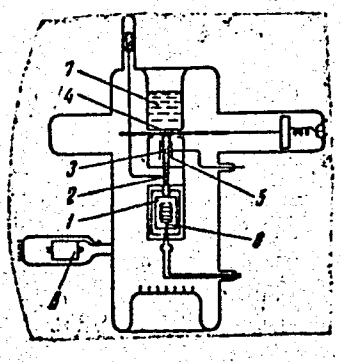

Fig. 1

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L 7725-66 EWT(1)/EPA(s)-2/ETC/EPF(n)-2/EWG(m)/EPA(w)-2/EWA(m)-2 IJP(c)

ACC NR: AP5025899 GG/AT SOURCE CODE: UR/0057/65/035/010/1848/1852

44,55 44,55 44,55

AUTHOR: Potokin, V.S.; Rakhovskiy, V.I.; Tikhonov, V.N.

44,55

ORG: All-Union Electrotechnical Institute im. V.I.Lenin (Vsesoyuznyy elektrotekhnicheskiy institut)

73B

TITLE: Investigation of electrode erosion in the bridge stage when breaking 1 to 5 kA currents in vacuum

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no. 10, 1965, 1848-1852

21,44,55 21,44,55

TOPIC TAGS: circuit breaker, vacuum, vacuum arc, electrode, tungsten, ionized plasma

ABSTRACT: Earlier investigations of one of the authors (V.I.Rakhovskiy. ZhTF, XXXIV, vyp. 11, 1964) of a heavy current vacuum circuit breaker, with particular reference to the stage in which a bridge of molten metal forms between the separating electrodes, have been extended to higher currents (up to 5 kA). The experimental technique was similar to that previously employed: cylindrical tungsten electrodes were rapidly separated, the voltage across the gap was observed with an oscilloscope, and the loss of electrode material was estimated by weighing tantalum foils that had been mounted near the gap. It was not possible to interrupt the discharge at any desired stage. It was found, however, that the loss of electrode material was always proportional to the duration of the arc stage of the discharge. From this it is concluded that in

Card 1/2 UDC: 621.3.064.26

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L 7725-66

ACC NR: AP5025899

breaking currents up to 5 kA the loss of electrode material due to formation of a liquid bridge is negligible compared with the total electrode erosion. The voltage drop during the bridge stage rose considerably when the current was increased beyond about 3 kA. As a result of the increased Joule heat the bridge material presumably became very hot (temperatures up to 14 800 °K are estimated), and a mass of highly ionized plasma was formed. The authors call this highly ionized plasma joining the electrodes the "anomalous bridge". Spontaneous explosive formation of an anomalous bridge with consequent spontaneous separation of the electrodes was sometimes observed. There is a brief theoretical discussion of the formation and vaporization of the bridge. It is concluded that in breaking currents of 2 to 5 kA there is formed between tungsten electrodes a mass of highly ionized plasma, that the mass of material eroded from the electrodes during the bridge stage exerts no appreciable influence on the duration of the subsequent vacuum arc, and that in designing high current vacuum circuit breakers one must take measures to avoid spontaneous separation of the electrodes. Such measures might be to increase the contact pressure or to employ softer electrode materials. Orig. art. has: 6 formulas and 4 figures.

SUB CODE: EE, EM, ME/ SUBM DATE: 11Nov64/ ORIG REF: 003/ OTH REF: 003

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

ACC NR: AP7006123 SOURCE CODE: UR/0056/67/052/001/0021/0028

AUTHOR: Pavlov, S. I.; Rakhovskiy, V. I.; Fedorova, G. M.

ORG: All-Union Electrotechnical Institute im. V. I. Lenin (Vsesoyuznyy elektrotekhnicheskiy institut)

TITLE: Measurement of the cross sections for the ionization of substances with low vapor tension by electron impact

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 52, no. 1, 1967, 21-28

TOPIC TAGS: ionization cross section, impact ionization, vapor pressure, lead, copper, silver

ABSTRACT: Since all earlier studies of ionization by electron impact were made for elements with high vapor tension, mostly metals, and at relatively low temperatures, and most elements have remained uninvestigated, for lack of a sufficiently simple and reliable measurement technique, the authors describe a procedure and apparatus for this purpose. The procedure is a modification of the atomic-beam method, first proposed by H. Funk (Ann. der Phys. v. 4, 149, 1930). In the apparatus developed by the authors, the substance is introduced in the ionization space in the form of an atomic beam and is made to cross a beam of monoenergetic electrons. The total number of ions produced in this manner is determined by measuring the ion current, and the concentration of the neutral atoms is determined from the intensity of the atomic beam. To separate the ion current due to the investigated substance from the ion

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ACC NR: AP/006123

current due to the residual gas, the atomic beam is modulated and the ac component of the ion current is recorded. Measurements were made of the apparent ionization cross sections of lead, copper, and silver at energies from the ionization threshold to 150 ev. The maximum ionization cross sections and the corresponding electron energies were 8×10^{-16} cm^2 at E = 55 ev for lead, 3.1×10^{-16} cm^2 at 29 ev for copper, and 2.9×10^{-16} cm^2 at 29 ev for silver. The results agree well with published theoretical estimates. The ionization functions of the three metals showed a linear dependence of the ionization on the energy, with an added structure superimposed on the curve for lead, which can be ascribed to autoionization. The authors thank M. A. Mazing and V. A. Fabrikant for a discussion of the work, B. N. Klyarfel'd for valuable remarks, and V. L. Granovskiy for suggesting the topic and directing the main results. Orig. art. has: 5 figures and 1 formula. [02]

SUB CODE: 20/ SUBM DATE: 27Jun66/ ORIG REF: 002/ OTH REF: 026/
ATD PRESS: 5117

Card 2/2

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

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PROCESSES AND PROPERTIES INDEX

18

Magnet Steel Containing 10% of Cobalt. B. G. Livshits and A. G. Rakhshtadt. (Kachestvennaya Stal, 1937, No. 7, pp. 37-40). (In Russian). A 10% cobalt steel with and without the addition of 1·5% of molybdenum was investigated; the object of the research was to establish the optimum heat-treatment conditions and to determine the magnetic properties. For parts 10 mm. thick, made of steel containing no molybdenum, the following heat treatment is recommended: Heating to 1200° C. for 5 min., followed by air-quenching, tempering at 700° for 75 min., followed by cooling in air, then heating to 880° for 7 min. followed by an air-quench. The material is then aged at 100° C. The magnetic properties obtained by this method are: Coercive force 130 oersted, and remanence 9500–10,000 gauss. For the steel containing 1·5% of molybdenum a similar heat treatment is recommended, with the difference that the final quenching temperature is 920° C. The coercive force obtained is 150 oersted and the remanence 8200–8500 gauss. The coercive force may be increased by raising the final quenching temperature.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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ca

9

Magnet steel with ten per cent cobalt. B. G. Livshits and A. G. Rokhstadt. *Kachestvennaya Stal* 5, No. 7, 37-41(1937); *Chem. Zentr.* 1938, I, 982.—Tests were made on a 10% Co magnet steel with and without the addn. of 1.5% Mo. The following heat-treatment is recommended for steel articles 10 mm. in thickness and without the addn. of Mo: heating to 1300° and holding at this temp. for 5 min., cooling in air, heating to 700° and holding at this temp. 75 min., cooling in air, then heating to 880° (holding 7 min.), and quenching in oil. Aging is done at 100° in boiling water. By this treatment the steel acquires a coercive force of 130 oersteds and a remanence of 9500-10,000 gausses. For a steel contg. 1.5% Mo the same heat-treatment is used except that the final heating temp. of 880° is changed to 920°. The Mo steel acquires a coercive force of 150 oersteds and a remanence of 8500-7500 gausses. In order to increase the coercive force the last quenching temp. must be raised. The use of Mo in a 10% Co steel increases the coercive force and reduces the remanence. It also changes the character of the deformation during hardening. Thus the ends of a horseshoe magnet of Mo-free Co steel spread apart after the hardening, while with a Mo-contg. Co steel the reverse phenomenon occurs. A magnet steel contg. 1.16% C, 8.74% Cr, 1.31% Mo and 10.9% Co acquires the same magnetic properties as are claimed for products of non-Russian firms. In steel contg. no Mo even better properties can be obtained.

M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

2. Properties of Alloys

Met Abs
v 2

Structure Transformations in Copper Nickel Iron Alloys. [illegible] and [illegible] Rakhshtadt (Zhur. [illegible] 1941, 11, 1098-1108; [illegible] 1942, 36, 1461). (In Russian.) The alloy containing copper 60, iron 20, and nickel 20% (cf. Neumann et al. [illegible] 1941, 1, 131) was studied, particularly in respect of its electromagnetic properties. The changes in electric resistivity and magnetic properties on heat treatment can be explained only by solution and the formation of a superstructure. On annealing a supercooled solid solution there occurs a decomposition into [illegible] of indefinite composition, but possessing a superstructure. A notice[illegible] in H (magnetic intensity) during the annealing [illegible] with coagulation of the decomposition phases and their approach to equilibrium. Work causes a decomposition of the superstructure of the alloy, having a heterogeneous structure. Large strains of low grade [illegible] which are oriented in the direction of the rolling and small strains [illegible] which are not oriented and which neutralize the influence of the large strains, thus lowering the value of H and the relation of the [illegible] to magnetic saturation. A second annealing after work leads to a return of [illegible] to the removal of the small strains. Heat treatment [illegible] 1000° C. has the sole purpose of changing all components of [illegible] solution. The first annealing causes formation of a two-phase structure [illegible] phases having an intermediate composition and [illegible] orientation; work done on this alloy destroys their [illegible] orients them; the final annealing removes the small strains [illegible] which retain their orientation, so that the [illegible] the direction of rolling [illegible] saturation.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

PROCESSES AND PROPERTIES INDEX

CA

9

Mutual diffusion of Pt and Ir in the solid state. O. E. Zvyagintsev, A. G. Rakhstadt and M. A. Vladimirova. *J. Applied Chem.* (U. S. S. R.) 17, 22-30(1944)(French summary).—Ir-Pt alloys, contg. 10, 25, 35 and 50% iridium, were prepd. from powd. components, and mutual diffusion therein was studied at 300, 1400 and 1500°. Very intensive diffusion occurs; after 10 hrs. at 1300° all alloys studied showed the presence of the solid solns. The moment of the appearance of homogeneous solid soln. is noted by the appearance of a max. in the curves of specific elec. cond., on microphotographs and röntgenograms. The diffusion of Ir into Pt is slower than that of Pt into Ir. The ready formation of solid soln. permits the use of powder-metallurgy methods of manuf. at fairly low temps.

G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

POGODIN-ALEKSEYEV, G. I.; GELLER, Yu. A.; and RAKHSHTADT, A. G.

Metallovedeniye, published by Oborongiz, Moscow, 1950

Sum #148

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RAKHSHTADT, A.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 441 - I

BOOK Call No.: TN690.P57

Authors: POGODIN-ALEKSEYEV, G. I., Prof., GELLER, YU. A., Ass. Prof., RAKHSHTADT, A. G., Ass. Prof.

Full Title: SCIENCE OF METALS. METHODS OF ANALYSIS, LABORATORY WORK AND PROBLEMS

Transliterated Title: Metallovedeniye. Metody analiza laboratornyye raboty i zadachi

Publishing Data

Originating Agency: None

Publishing House: State Publishing House of the Defense Industry

Date: 1950 No. pp.: 455 No. of copies: 15,000

Editorial Staff

Editor of Section VI: Landa, A. F.

Appraisers: Gulyayev, A. P., Dr. of Tech. Sci., and Blanter, M. E., Kand. of Tech. Sci.

Others: Yakhnina, V. D., Fomina, N. N. and Kazarnovskaya, Z. M.

Text Data

Coverage: This excellent textbook gives in its introductory chapter a historical sketch of Russian metallurgical science and in the subsequent sections a description of methods for studying metals, various stages of laboratory work (heat analysis, macro- and microanalysis, hardening measurement, determination of physical properties, heat

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treatment, etc.) and hundreds of problems on structural diagrams of binary and ternary alloys, analysis of microstructure of metals (steel, cast iron and nonferrous alloys), as well as on selection of the proper alloy and the heat treatment conditions. Most problems are equipped with related references. Detailed solutions of problems for every main section are given in order to show the student how to apply the acquired knowledge for practice. In Appendix I the authors give a classified description of standardized alloys most commonly used in the USSR, divided into the following sections: (1) steel, (2) cast iron, (3) copper-base alloys, (4) aluminum-base alloys, (5) magnesium-base alloys, (6) babbitts, and (7) hard metals. Within these sections the alloys are arranged by classes, groups and subgroups, according to various criteria: means of production, application, composition, properties, etc., whatever is most characteristic for each individual alloy or group of alloys. This part of the book contains valuable information on All-Union Standards for metals: their chemical composition, properties, application, and an explanation of the procedure used in the designation of types of industrial alloys. Emphasis throughout the book is on application of the theoretical material to specific practical problems.

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Metallovedeniye. Metody analiza laboratornyye raboty i zadachi AID 441 - I

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Ch. II	Structural Diagrams of Binary and Ternary Alloys	174
Ch. III	Plastic Deformation and Recrystallization	229
Ch. IV	Structure, Properties and Heat Treatment of Steel and Cast Iron	234
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	I Composition of Main Industrial Alloys	394
	II Brinell Hardness Numbers	447
	III Relations between Brinell, Rockwell, and Vickers Hardness Numbers	449

Purpose: A textbook for students of institutes of technology and mechanical engineering

Facilities: None

No. of Russian and Slavic References: Numberous references throughout book.

Available: Library of Congress.

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APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A. G. and BROKHES, G. T.

"The Influence of Hardening With High Frequency Heated Currents on the Resilience of Steel," p. 43 of the book "Problems on Strength and Deformation of Metals and Alloys," released by the Moscow Engineer-Physics Inst., Mashgiz, 1954.

TABCON D 342613, 24 Oct 55

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, dotsent; FOMINA, N.N.

Mechanical propertiesof platinum-iridium alloys. Sbor.nauch.rab. MIFI no.8:125-133 '54. (MLRA 9:3)
(Platinum-iridium alloys--Testing)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

GARDIN, Aleksei Ivanovich; RAKHSHTADT, A.G., redaktor; GORDON, L.M., redaktor; ATTOPOVICH, M.K., tekhnicheskiy redaktor.

[Electron microscopy of steel] Elektronnaia mikroskopiia stali. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po chernoy i tsvetnoi metallurgii, 1954. 234 p. illus. (MIRA 8:2)
(Electron microscope) (Steel--Metallography)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, dotsent, redaktor; MATVEYEVA, Ye.N., tekhnicheskiy redaktor.

[Present-day methods for the heat treatment of steel] Sovremennye metody termicheskoi obrabotki stali. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1954. 402 p. (MLRA 7:12)

1. Dom inzhenera i tekhnika imeni Dzerzhinskogo.
(Steel--Heat treatment)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, dotsent.

Characteristics of elastic hysteresis and internal friction. [Trudy] MVTU no.41:192-203 '55. (MLRA 9:10)

(Hysteresis) (Physical Metallurgy)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LAND, A.F., doktor tekhnicheskikh nauk, professor, redaktor; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, redaktor; TIKHONOV, A.Ya., tekhnicheskiy redaktor.

[Metallography and modern methods in the heat treatment of cast iron] Metallovedenie i sovremennye metody termicheskoi obrabotki chuguna. Pod.red. A.F.Landa. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroitel'noi lit-ry, 1955. 290 p. (MLRA 8:12)

1. Dom inzhenera i tekhnika imeni F.E.Dzerzhinskogo, Moscow.
(Cast iron--Metallography)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, dotsent.

Metal resistance to minor plastic deformations. [Trudy] MVTU no.41:213-218 '55. (MLRA 9:10)

(Deformations (Mechanics)) (Steel alloys)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

SOV/124-58-1-1296

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 1, p 160 (USSR)

AUTHORS: Rakhshtadt, A. G., Shtremel', M. A.

TITLE: A New Method for the Determination of the Elastic Limit on Thin Specimens (Novyy metod opredeleniya predela uprugosti na tonkikh obraztsakh)

PERIODICAL: V sb.: Metalloved. i termicheskaya obrabotka metallov (MVTU, Nr 41). Moscow, Mashgiz, 1955, pp 219-225

ABSTRACT: 100x5 mm strips, 0.2-0.3 mm thick, were subjected to buckling up to a prescribed deformation in the PMT-3 testing device. The residual deflection was measured under the microscope with an accuracy of up to 0.002 mm. The elastic limit was determined according to formulas adduced in the paper, with an allowance of 0.001-0.03% for residual deformation.

A. V. Bobylev

Card 1/1

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A G.

GELLER, Yuliy Aleksandrovich, professor, doktor tekhnicheskikh nauk; RAKHSHTADT, A.G., redaktor; GORDON, L.M., redaktor; VAYNSHTEYN, Ye. B., tekhnicheskiy redaktor.

[Tool steel] Instrumental'nye stali. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry, po chernoi i tsvetnoi metallurgii, 1955. 548 p. (MLRA 8:10)
(Tool steel)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

FORTY, A.J.; SHTREMEL', M.A. [translator]; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, redaktor; GORDON, L.M., redaktor izdatel'stva; MIKHAYLOVA, V.V., tekhnicheskiy redaktor

[Direct observations of dislocations in crystals. Translated from the English] Neposredstvennoe nabliudenie dislokatsii v kristallakh. Perevod M.A.Shtremelia, pod red. A.G.Rakhshtadta. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chornoi i tsvetnoi metallurgii. 1956. 57 p. (MIRA 9:11)

(Dislocations in crystals)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

BERNSHTEYN, Mark L'vovich; RAKHSHTADT, A.G., redaktor; GORDON, L.M., redaktor izdatel'stva; VAYNSHTEYN, Ye.B., tekhnicheskiy redaktor

[Steels and alloys for use at high temperatures] Stali i splavy dlia raboty pri vysokikh temperaturakh. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 238 p. (MLRA 9:10)

(Metals at high temperatures)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, redaktor; UVAROVA, A.F., tekhnicheskiy redaktor

[Modern methods of testing materials in machine building; a collection of reports] Sovremennye metody ispytanii materialov v mashinostroenii; sbornik dokladov. Moskva, Gos. nauchno-tekhn. izd-vo mashino-stroit. lit-ry, 1956. 334 p. (MIRA 9:8)

1. Moscow. Moskovskiy dom nauchno-tekhnicheskoy propagandy imeni F.Ye.Dzerzhinskogo
(Metals--Testing)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LOZINSKIY, Mikhail Grigor'yevich, doktor tekhnicheskikh nauk; BELYAYEVA, G.F., kandidat tekhnicheskikh nauk, retsenzent; BAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, redaktor; TIKHONOV, A.Ya., tekhnicheskiy redaktor

[High temperature metallography] Vysokotemperaturnaia metallografiia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 311 p. (MLRA 10:2)

(Metallography) (Metals at high temperatures)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LIVSHITS, Boris Grigor'yevich, professor, doktor tekhnicheskikh nauk; KONDORSKIY, Ye.I., professor, doktor fiziko-matematicheskikh nauk, retsenzent; [redacted], dotsent, kandidat tekhnicheskikh nauk, redaktor; MODEL', B.I., tekhnicheskiy redaktor

[Physical properties of metals and alloys] Fizicheskie svoistva metallov i splavov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 352 p. (MLRA 10:2)
(Alloys) (Metals)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

POGODIN-ALEKSEYEV, Georgiy Ivanovich; GELLER, Yuliy Aleksandrovich; RAKHSHTADT, Aleksandr Grigor'yevich; LAKHTIN, Yu.M., professor, doktor tekhnicheskikh nauk, retsenzent; BERNSHTEYN, M.L., dotsent kandidat tekhnicheskikh nauk, redaktor; PETROVA, I.A., izdatel'skiy redaktor; GLADKIKH, N.N., tekhnicheskiy redaktor

[Physical metallurgy; methods of analysis, laboratory work and problems] Metallovedenie; metody analiza, laboratornye raboty i zadachi. Izd. 2-oe, perer. Moskva, Gos. izd-vo obor. promyshl., 1956. 427 p. (MLRA 9:10)

(Physical metallurgy)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

AVRASIN, Ya.D., kandidat tekhnicheskikh nauk; BERG, P.P., professor, doktor tekhnicheskikh nauk, BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; GENEROZOV, P.A., starshiy nauchnyy sotrudnik; GLINER, B.M., inzhener; DAVIDOVSKAYA, Ye.A., kandidat tekhnicheskikh nauk; YELCHIN, P.M., inzhener; YERSMIN, N.I., kandidat fiziko-matematicheskikh nauk; IVANOV, D.P., kandidat tekhnicheskikh nauk; ZNOROZ, L.I., inzhener; KOBRIN, M.M., kandidat tekhnicheskikh nauk; KORITSKIY, V.G., dotsent; KROTKOV, D.V., inzhener; KUDRYAVTSEV, I.V., professor, doktor tekhnicheskikh nauk; KULIKOV, I.V., kandidat tekhnicheskikh nauk; LEPETOV, V.A., kandidat tekhnicheskikh nauk; LIKINA, A.F., inzhener; MATVEYEV, A.S., kandidat tekhnicheskikh nauk; MIL'MAN, B.S., kandidat tekhnicheskikh nauk; PAVLUSHKIN, N.M., kandidat tekhnicheskikh nauk; PTITSYN, V.I., inzhener [deceased]; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk, RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; RYABCHENKOV, A.V., professor, doktor khimicheskikh nauk; SIGOLAYEV, S.Ya., kandidat tekhnicheskikh nauk; SMIRYAGIN, A.P., kandidat tekhnicheskikh nauk, SUL'KIN, A.G., inzhener; TUTOV, I.Ye., kandidat tekhnicheskikh nauk, KHRUSHCHOV, M.M., professor, doktor tekhnicheskikh nauk; TSYPIN, I.O., kandidat tekhnicheskikh nauk; SHAROV, M.Ya., inzhener; SHERMAN, Ya.I., dotsent; SHMELEV, B.A., kandidat tekhnicheskikh nauk; YUGANOVA, S.A., kandidat fiziko-matematicheskikh nauk; SATEL', E.A., doktor tekhnicheskikh nauk, redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor

[Machine builder's reference book] Spravochnik mashinostroitelia; v shesti tomakh. izd-vo mashinostroit. lit-ry. Vol.6. (Glav. red.toma E.A.Satel'. Izd. 2-oe, ispr. i dop.) 1956. 500 p. (MLRA 9:8)
(Machinery--Construction)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G.

AL'TGAUZEN, O.N., kandidat fiziko-matematicheskikh nauk; BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; BLANTER, M.Ye., doktor tekhnicheskikh nauk; BOKSHTEYN, S.Z., doktor tekhnicheskikh nauk; BOLKHOVITINOVA, Ye.N., kandidat tekhnicheskikh nauk; BORZDYKA, A.M., doktor tekhnicheskikh nauk; BUNIN, K.P., doktor tekhnicheskikh nauk; VINOGRAD, M.I., kandidat tekhnicheskikh nauk; VOLOVIK, B.Ye., doktor tekhnicheskikh nauk [deceased]; GAMOV, M.I., inzhener; GELLER, Yu.A., doktor tekhnicheskikh nauk; GORELIK, S.S., kandidat tekhnicheskikh nauk; GOL'DENBERG, A.A., kandidat tekhnicheskikh nauk; GOTLIB, L.I., kandidat tekhnicheskikh nauk; GRIGOROVICH, V.K., kandidat tekhnicheskikh nauk; GULYAYEV, B.B., doktor tekhnicheskikh nauk; DOVGALEVSKIY, Ya.M., kandidat tekhnicheskikh nauk; DUDOVTSEV, P.A., kandidat tekhnicheskikh nauk; KIDIN, I.N., doktor tekhnicheskikh nauk; KIPNIS, S.Kh., inzhener; KORITSKIY, V.G., kandidat tekhnicheskikh nauk; LANDA, A.F., doktor tekhnicheskikh nauk; LEYKIN, I.M., kandidat tekhnicheskikh nauk; LIVSHITS, L.S., kandidat tekhnicheskikh nauk; L'VOV, M.A., kandidat tekhnicheskikh nauk; MALYSHEV, K.A., kandidat tekhnicheskikh nauk; MEYERSON, G.A., doktor tekhnicheskikh nauk; MINKEVICH, A.N., kandidat tekhnicheskikh nauk; MOROZ, L.S., doktor tekhnicheskikh nauk; NATANSON, A.K., kandidat tekhnicheskikh nauk; NAKHIMOV, A.M., inzhener; NAKHIMOV, D.M., kandidat tekhnicheskikh nauk; POGODIN-ALEKSEYEV, G.I., doktor tekhnicheskikh nauk; POPOVA, N.M., kandidat tekhnicheskikh nauk; POPOV, A.A., kandidat tekhnicheskikh nauk; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; ROGEL'BERG, I.L., kandidat tekhnicheskikh nauk;

(Continued on next card)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

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AL'TGAUZEN, O.N.---- (continued) Card 2.
SADOVSKIY, V.D., doktor tekhnicheskikh nauk; SALTYKOV, S.A., inzhener; SOBOLEV, N.D., kandidat tekhnicheskikh nauk; SOLODIKHIN, A.G., kandidat tekhnicheskikh nauk; UMANSKIY, Ya.S., kandidat tekhnicheskikh nauk; UTEVSKIY, L.M., kandidat tekhnicheskikh nauk; FRIDMAN, Ya.B., doktor tekhnicheskikh nauk; KHIMYSHIN, F.F., kandidat tekhnicheskikh nauk; KHRUSHCHEV, M.M., doktor tekhnicheskikh nauk; CHERNASHKIN, V.G., kandidat tekhnicheskikh nauk; SHAPIRO, M.M., inzhener; SHKOL'NIK, L.M., kandidat tekhnicheskikh nauk; SHRAYBER, D.S., kandidat tekhnicheskikh nauk; SHCHAPOV, N.P., doktor tekhnicheskikh nauk; GUDTSOV , N.T., akademik, redaktor; GORODIN, A.M. redaktor izdatel'stva; VAYNSHTEYN, Ye.B., tekhnicheskiy redaktor

[Physical metallurgy and the heat treatment of steel and iron; a reference book] Metallovedenie i termicheskaia obrabotka stali i chuguna; spravochnik. Pod red. N.T.Dudtsova, M.L.Bernshteina, A.G. Rakhshtadta. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 1204 p. (MLRA 9:9)

1. Chlen -korrespondent Akademii nauk USSR (for Bunin)
(Steel--Heat treatment) (Iron--Heat treatment)
(Physical metallurgy)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

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RAKHSHADT, A.G.

Category : USSR/Solid State Physics - Mechanical Properties of Crystals and Polycrystalline Compounds E-9

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3971

Author : Rakhshadt, A.G., Shtremel', M.A.
Title : Internal Friction in Metals and Modern Methods for its Determination

Orig Pub : Sovrem. metody ispytaniy meterialov v mashinostroyenii. M., Mashgiz, 1956, 79-109

Abstract : Survey, Bibliography, 43 titles.

Card : 1/1

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, dotsent; KOP'YEV, I.M., inzhener.

Study of internal friction of beryllium bronze. [Trudy] MVTU no.70:51-63 '56. (MLRA 9:9)

(Copper-tin-beryllium alloys)
(Bronze--Metallography)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LASHKO, Nikolay Fedorovich; Yeremin, Nikolay Ivanovich; [illegible] kandidat tekhnicheskikh nauk, dotsent, retsenzent; [illegible]BERG, A.A., inzhener, redaktor; SHENTURINA, Ye.A., redaktor izdatel'stva; SALAZKOV, N.P., tekhnicheskiy redaktor; MATVEYEV, Ye.N., tekhnicheskiy redaktor

[Phase analysis and structure of austenitic steels] Fazovyi analiz i struktura austenitnykh stalei. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 234 s. (MLRA 10:10)
(steel)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

GOKUN, B.V., redaktor; ACHERKAN, N.S., zasluzhennyy deyatel' nauki i tekhniki, redaktor; BOGUSLAVSKIY, B.L., professor, redaktor; GLIZMANENKO, D.L., kandidat tekhnicheskikh nauk, redaktor; RABINOVICH, B.V., kandidat tekhnicheskikh nauk, redaktor; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk, redaktor; SASOV, V.V., kandidat tekhnicheskikh nauk, redaktor; STOROZHEV, M.V., kandidat tekhnicheskikh nauk, redaktor; SOKOLOVA, T.F., tekhnicheskiy redaktor.

[Present-day trends in machine manufacturing; a collection of articles] Sovremennye napravleniia v oblasti tekhnologii mashinostroeniia; sbornik. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 363 p. (MIRA 10:11)

(Machine industry)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LAKHTIN, Yuriy Mikhaylovich; RAKHSHTADT, A.G., dots.kand.tekhn.nauk, nauchnyy redaktor; BERLIN, Ye.N., red.izd-va; ATTOPOVICH, M.K., tekhn.red.

[Physical metallurgy] Osnovy metallovedeniia. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 458 p. (MIRA 11:2)
(Physical metallurgy)

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RAKHSHTADT, A. G., (Cand. Tech. Sci., Docent); SHUR, D. M. (Engr.)

"Properties and Heat Treatment of Alloys for Elastic Elements of Instruments," Termicheskaya obrabotka i prochnost' metallov i splavov; sbornik statey (Heat Treatment and Strength of Metals and Alloys; Collection Articles) Moscow, Mashgiz, 1958, 177 p.

A highly sensitive method was developed and a device designed for testing the properties of metal diaphragms for instruments. The diaphragms tested were made of beryllium bronze, phosphor bronze, and a high-alloy steel (N36KhTYu) containing nickel, chrome, titanium, and aluminum. Tests made on the diaphragms after heat treatment showed that their properties depend strongly on the temperature and length of aging, during which a decomposition of solid solutions takes place. Aging increases hardness and the elastic limit up to a certain maximum, whose position in time depends on the temperature of aging. Hysteresis, residual deformations, and sag are at their minimum approximately at those temperatures at which the properties associated with strength are most pronounced. Thus it is seen that these properties of the diaphragms are linked with the structure of the alloys; thehigher the resistance of the development of microplastic deformations, the smaller the degree of hysteresis. On the basis of these findings, certain methods of heat treatment are recommended for diaphragms made of the alloys specified above.

"A Method of Determining Energy Dissipation in Elastic Vibrations," IBid.(For abstract see card on co-author: KREMNEV, I. S.,

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RAKHSHTADT, A.G., kand.tekhn.nauk, red.; VALOV, N.A., red.izd-va; KLEYNMAN, M.R., tekhn. red.

[Physical properties of metals and their heat treatment]Metallovedenie i termicheskaia obrabotka. Moskva, Metallurgizdat, 1958. 274 p. (MIRA 15:9)
(Physical metallurgy) (Steel)

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KHKHSM7PPT, P.G.

PHASE I BOOK EXPLOITATION SOV/1598

Moscow. Dom nauchno-tekhnicheskoy propagandy im. F.E. Dzerzhinskogo

Sovremennyye splavy i ikh termicheskaya obrabotka (Contemporary Alloys and Their Heat Treatment) Moscow, Mashgiz, 1958. 389 p. 12,000 copies printed.

Additional Sponsoring Agency: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR.

Ed. (Title page): Yu. A. Geller, Doctor of Technical Sciences; Ed. (Inside book): V.V. Rabovinskiy, Engineer; Tech. Ed.: B.I. Model'; Managing Ed. for Literature on Metal Working and Tool Making: S.D. Bogoslovsk, Engineer.

PURPOSE: The book is intended for engineering and technical personnel of heat-treatment shops and test laboratories of machine-building plants.

COVERAGE: This collection of 28 articles, compiled by 33 authors, aims to acquaint the reader with modern practice in the heat treatment of steels. The authors are primarily concerned with the development of various types of structural, tool, and heat-resistant steels and with the use of their alloying elements. Materials-handling equipment is described at some length. The treatment of alloys, particularly those of titanium, also comes within the scope of the collection. The book is thoroughly diagrammed, and a good deal of the material is shown in graphical form. Among the problems dealt with are the minimization of deformations, the introduction of the automatic control of heat-treating equipment, together with fully mechanized tool manufacture, and the various properties of different alloying elements. There are numerous tables and drawings. Bibliographic listings placed at the end of chapters are predominantly Soviet. The articles comprising this collection are reports delivered at a conference held in the Scientific and Technical Propaganda House named F.E. Dzerzhinskiy in Moscow.

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Bakhmutskiy, A.G., O.S. Mochcherinova, and V.V. Zikiyev. Properties and Heat Treatment of Boron-alloyed Spring Steels 138

Geller, Yu. A. Improvements in the Composition and Heat Treatment of Tool Steels 149

Volkov, A.N. An Investigation of Ni60j Low-alloy Steel as a Material for Cutting Tools 171

Ivanov, A.G. New Types of High-speed Steel 175

Galanin, G.P. Hardening and Tempering of High-speed Steels With Induction Heating 178

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

SOV/137-58-11-22981

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 164 (USSR)

AUTHORS: Rakhshtadt, A. G., Shur, D. M.

TITLE: Properties and Heat Treatment of Alloys Used for Elastic Members of Instruments (Svoystva i termicheskaya obrabotka splavov dlya uprugikh elementov priborov)

PERIODICAL: V sb.: Term. obrabotka i prochnost' metallov i splavov. Moscow, Mashgiz, 1958, pp 65-114

ABSTRACT: Properties were investigated and a technique was developed for the heat treatment of corrugated membranes made of Be-bronzes Br. B2 and Br. B2.5, of P bronze Br.0F6.5-0.15, and of steel N36KhT1-0. To test the membranes a special device was used which accomplishes the determination of the properties of the membranes by the non-contact method. It is established that the properties of the membranes depend greatly upon the temperature and the aging period. The following procedures for the heat treatment of membranes are recommended: a) for N36KhT1-0 steel heating in a salt bath (35% NaCl + 65% $BaCl_2$) at 950°C ± 10°, cooling in water, aging in a vacuum furnace at 680-700° 1.5-2 hours; b) for Br. B2 heating in N dissociation medium at

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Properties and Heat Treatment of Alloys Used for Elastic Members (cont.)

$790^{\circ} \pm 10^{\circ}$, cooling in water, aging in a vacuum furnace at 350° 45 min. It is established that Br. B 2.5 has no advantages over Br. B2 and that Br. 0F 6.5 - 0.15 is not suitable for membranes, because it is difficult to shape. Bibliography: 43 references.

T. F.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

SOV/137-59-9-20364

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 9, p 203 (USSR)

AUTHORS: Rakhshtadt, A.G., Meshcherinova, O.N., Zikeyev, V.V.

TITLE: Properties and Heat Treatment of Spring Steel Alloyed With Boron

PERIODICAL: V sb.: Sovrem. splavy i ikh term. obrabotka, Moscow, Mashgiz, 1958, pp 132 - 148

ABSTRACT: The authors investigated the effect of B (~ 0.003%) on the properties of 50, 50R, 55S2, 55S2R, U8 and U8R grade steels. The investigations included σ_e, E, the coefficient of internal friction, fitness to tempering, kinetics of isothermical transformation of austenite, changes of mechanical properties in annealing and the microstructure. It was stated that the addition of 0.003% B in 50, 55S2 und U8 steels increased elastic properties of the steels and their relaxation stability. Increased fitness to tempering of 50R steel makes it possible to use it for springs of larger cross section than those of 50 steel. There are 14 bibliographical titles.

I.B.

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

SOV/137-58-10-21250

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 115 (USSR)

AUTHOR: Rakhshtadt, A. G.

TITLE: Heat Treatment of Stainless Dispersion-hardening Spring Alloys (Termicheskaya obrabotka nerzhaveyushchikh dispersionno-tverdeyushchikh pruzhinnykh splavov)

PERIODICAL: V sb.: Metallovedeniye i term. obrabotka. Moscow, Metallurgizdat, 1958, pp 181-228

ABSTRACT: Structural transformations were investigated and the optimum process for heat treating the N36KhTYu alloy was established. By the determination of the mechanical properties, hardness, and resistivity and by microstructural analysis it was established that the N36KhTYu alloy of the Fe-Ni-Cr-Ti-Al system attains optimum mechanical and elastic properties as the result of quenching from 900 - 950°C in water and tempering (T) at 700° for 2 hours, at an H_v of 440. The heating to 900 - 950° dissolves the excess carbides, creating areas of heterogeneity which during quenching constitute the initial stage of the disintegration of the solid solution. During T at 500 - 700° the disintegration of the solid solution occurs on the grain boundaries,

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Heat Treatment of Stainless Dispersion-hardening Spring Alloys

on the boundaries of twin cyrstals, and along the slip lines created by the action of the quenching stresses. During T at 650 - 700° the separation of the two intermetallide phases, η (compounds of the Ni_3Ti type) and γ', corresponding to the compound of the $Ni_3(Al, Ti)$ type occurs. At the beginning of T the η phase predominates, later on the γ' phase prevails. High-temperature T of short duration at 700° following 4 - 8 hour T at 500° decreases the hardness and the electrical resistivity, creating a regression effect. The fundamental cause of hardening upon T is the immediate effect of the particles of the excess phase which retards the movement of dislocation and the elastic unfolding of the blocks, also retarding this movement. Bibliography: 10 references.

F. U.

1. Springs--Production 2. Springs--Materials 3. Alloys--Heat treatment
4. Alloys--Transformations

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MIKRYUKOV, Vasiliy Yemel'yanovich, doktor fiziko-matemat.nauk; RAKHSHTADT, A.G., kand.tekhn.nauk, retsenzent; GETLING, B.V., red.; MISHARINA, K.D., red.izd-va; MIKHAYLOVA, V.V. tekhn.red.

[Thermal and electrical conductivity in metals and alloys] Teploprovodnost' i elektroprovodnost' metallov i splavov. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1959. 260 p. (MIRA 12:8)
(Physical metallurgy)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

LIVSHITS, Boris Grigor'yevich, prof., doktor tekhn.nauk. Prinimali uchastiye: PIGUZOV, Yu.V., kand.tekhn.nauk; SOLOV'YEVA, N.A., kand.tekhn.nauk. KONDORSKIY, Ye.I., prof., doktor fiz.-matem. nauk, retsenzent; RAKHSHTADT, A.G., dotsent, kand.tekhn.nauk, red.; EL'KIND, V.D., tekhn.red.

[Physical properties of metals and alloys] Fizicheskie svoistva metallov i splavov. Moskva, Gos.nauchno-tekhn.izd-vo mashino-stroit.lit-ry, 1959. 366 p. (MIRA 13:5)
(Metals)

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013441

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

RAKHSHTADT, A.G.

BOKSHTEYN, Samuil Zeylikovich; KISHKIN, Sergey Timofeyevich; MOROZ, Lita Markovna; ZHUKHOVITSKIY, A.A., prof., doktor khim.nauk, retsenzent; RAKHSHTADT, A.G., dotsent, kand.tekhn.nauk, red.; SHLYMPAYN, L.I., izdat.red.; ROZHIN, V.P., tekhn.red.

[Investigating the structure of metals by means of radioactive isotopes] Issledovanie stroeniia metallov metodom radioaktivnykh izotopov. Moskva, Gos.izd-vo obor.promyshl., 1959. 217 p. (MIRA 13:2)

(Metallography)
(Radioisotopes--Industrial applications)

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Translation from: Referativnyy zhurnal. Mashinostroyeniye, 1960, No. 9, p. 20, # 43233

AUTHORS: Rakhshtadt, A.G., Meshcherinova, O.N., Zelenskiy, G.K., Timofeyeva, G.S.

TITLE: Investigating the Properties and Heat Treatment of Boron-Alloyed Spring Steels

PERIODICAL: V sb.: Metallovedeniye i term. obrabotka. ("Stal'", 1958, Prilozh.), Moscow, 1959, pp. 93-126

TEXT: The authors give an account of the investigation results of the effect of boron (0.0017 - 0.005%) and heat-treatment conditions on the mechanical properties of the spring steel grades 50Х (50Kh), 50ХФА (50KhFA), 55ХГ (55KhG), 55ХГС (55KhGS), 55СГ2 (55SG2), 55С2 (55S2) and 60С2 (60S2). It is shown that small boron additions (approximately 0.003%) have a positive effect on the technological and mechanical properties of the steel grades investigated. Boron does not essentially change the granularity of austenite during heating up to 1,050°C (if the steel is preliminarily reduced with aluminum and titanium). The

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Investigating the Properties and Heat Treatment of Boron-Alloyed Spring Steels

strongest effect of boron on the tempering ability can be observed with the chrome-manganese, 55ХГР (55KhGR), and silicon-manganese, 55СГ2Р (55SG2R), steel grades. Steel grades with boron possess a somewhat higher E at all annealing temperatures, a higher fatigue strength and higher ductility and toughness values after isothermal hardening.

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

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"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001344

SOV/133-59-9-21/31

AUTHORS: Rakhshtadt, A.G., Candidate of Technical Sciences and Grishin, A.M., Engineer

TITLE: The Influence of Boron on the Properties and Conditions of Thermal Treatment of Stainless Spring Steel

PERIODICAL: Stal', 1959, Nr 9, pp 830-835 (USSR)

ABSTRACT: The influence of boron additions on the properties of spring steel EI702 (N36KhTYu) was investigated in order to determine the optimum concentration of boron and conditions for thermal treatment for a maximum increase in the elastic properties of the steel. The chemical composition of steels with and without boron used for the investigation is given in the text. Steels with the following content of boron were tested: 0.003, 0.005 and 0.007 (calculated on the charge smelted). After forging, hot rolling and hardening steel was rolled into strip 0.25 to 0.3 mm thick from which specimens (as well as semis for membranes) were stamped. The influence of hardening temperature on the elasticity limit, elasticity modulus and hardness of steel with and without boron after annealing for 1 hour at 700°C - Fig 1; the influence of soaking time at various annealing temperatures

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The Influence of Boron on the Properties and Conditions of Thermal Treatment of Stainless Spring Steel

(650, 700, 775 and 825°C) after hardening from 925°C on the above properties of steel without and with various boron additions - Fig 2 and the table; the microstructure of steel without and with 0.005% of boron after hardening from 925°C and annealing for 1 hour at 700°C - Fig 3; the dependence of the elasticity limit on the duration of loading of the steels without and with 0.003 and 0.005% of boron - Fig 4; the influence of the soaking time at the annealing temperature (700°C) on the elasticity limit, elasticity modulus, hysteresis, residual deformation and hardness of membranes from the steel without and with boron additions (after hardening from 925°C) - Fig 5; the dependence of elastic properties of membranes from the steel after annealing for 4 hours at 650°C and for 2 hours at 700°C, on the boron content - Fig 6. It was found that the introduction of boron in an amount up to 0.007% into E1702 steel increases its hardness and the elasticity limit after annealing. It is considered that the influence of boron is due to the formation of so called adsorption zones along the grain

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The Influence of Boron on the Properties and Conditions of Thermal Treatment of Stainless Spring Steel

boundaries (as well as along inclusions) which interfere with the movement of dislocations. An enrichment in boron of the boundary zones slows down the process of diffusion in these zones. Thus the decomposition process takes place practically uniformly throughout the whole volume of grains (although it begins in zones of structural non-uniformity). The limiting or critical concentration of boron above or below which the elastic properties of the steel decrease, is apparently near to the limit of solubility of boron in solid solution and for this steel corresponds to 0.005% (calculated on the charge). The effect of boron depends on hardening conditions; the highest increase in the elasticity limit is obtained after hardening from 900 to 950°C. Boron additions do not change the kinetics of hardening on annealing and apparently have no influence on the nature of separating phases. Optimum conditions for the steel with and without boron are practically identical. There

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The Influence of Boron on the Properties and Conditions of Thermal Treatment of Stainless Spring Steel

are 6 figures, 1 table and 15 references, 11 of which are Soviet, 3 English and 1 German.

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RAKHSHTADT, A. G.

PHASE I BOOK EXPLOITATION SOV/5457

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Sektsiya metallovedeniya i termicheskoy obrabotki metallov.

Metallovedeniye i termicheskaya obrabotka metallov; trudy Sektsii metallovedeniya i termicheskoy obrabotki metallov (Physical Metallurgy and Heat Treatment of Metals; Transactions of the Section of Physical Metallurgy and Heat Treatment of Metals) no. 2. Moscow, Mashgiz, 1960. 242 p. 6,000 copies printed.

Sponsoring Agency: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Tsentral'noye pravleniye.

Editorial Board: G. I. Pogodin-Alekseyev, Yu. A. Geller, A. G. Rakhshtadt, and G. K. Shreyber; Ed. of Publishing House: I. I. Lesnichenko; Tech. Ed.: B. I. Model'; Managing Ed. for Literature on Metalworking and Machine-Tool Making: V. I. Mitin.

PURPOSE: This collection of articles is intended for metallurgists, mechanical engineers, and scientific research workers.

COVERAGE: The collection contains articles describing results of research conducted by members of NTO (Scientific Technical Society) of the machine-building industry in the field of physical metallurgy, and in the heat treatment of steel, cast iron, and nonferrous metals and alloys. No personalities are mentioned. Most of articles are accompanied by Soviet and non-Soviet references and contain conclusions drawn from investigations.

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