FEDOTOV, L. N.

Fedotov, L. N. -- "Investigation of the Magnetic Saturation of Ferronickel Alloys in the Low-Temperature Range (77.3-20.4 degrees K.)". Moscow State U imeni M. V. Lomonosov. Moscow, 1956. (Disseration for the Degree of Candidate in Physicomathemical Sciences).

So: Knizhnaya Letopis', No. 11, 1956, pp 103, 114

137-58-2-3853

FEDOTOV, L.N.

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 225 (USSR)

AUTHORS: Kondorskiy, Ye.I., Fedotov, L.N.

TITLE: In Investigation of the Magnetic Saturation of Binary Iron-nickel Alloys in the Region of Nitrogen-hydrogen Temperatures (Issledovaniye magnitnogo nasyshcheniya binarnykh zhelezonikelevykh splavov v oblasti azotno-vodorodnykh temperatur)

PERIODICAL: Sb. tr. Tsentr. n.-i. in-t chernoy metallurgii, 1956, Nr 15, pp 11-32

ABSTRACT: Magnetic saturation (MS) was measured on a magnetic cryostat with a magnetizing solenoid creating a field of up to 6000 oersteds held uniform to within 0.5% per 100 mm. The measurements were made in the 20.4-83°K interval by the ballistic method with "incomplete compensation", yielding an error of $\leqslant 0.5\%$. Temperature was measured by a Pt resistance thermometer accurate to 0.1-0.3°. The investigations were conducted on ellipsoidal specimens of Ni-Fe alloys containing 35-100% Ni, in which an appropriate heat treatment was employed to create order or disorder. The

Card 1/2

An Investigation of the Magnetic (cont.)

relationship of MS to temperature at low temperatures is better described by the "$T^{3/2}$" than by the "T^2" law which is usually employed at the higher temperatures. An increase in MS is observed when the alloys are annealed; this may be explained by the effect of the ordering process. The change in mean atomic magnetic moment on ordering is 3-3.5%. The "$T^{3/2}$" law for MS makes it possible to calculate the θ' parameter characterizing the exchange reaction in the alloy. Annealing causes θ' to increase by about 15% relative to the value for the hardened state. An analogy with the similar Fe-Pd system leads to the conclusion that this change in exchange energy is due to the ordering processes. The Curie point θ of the corresponding alloys undergo little change as this occurs. The θ'/θ ratio dimishes with with diminution in the Ni content of the alloy, inasmuch as θ' and θ are dependent to different degrees upon the value of the mean atomic magnetic moment and consequently change differently with variation in the composition of the alloy.

P.S.

1. Iron-nickel alloys--Magnetic properties--Thermal factors 2. Iron-nickel alloys--Magnetic properties--Measurement

Card 2/2

28554
S/137/61/000/009/031/087
A060/A101

24.2200 also 6904, 6906

AUTHORS: Fedotov, L.N., Sumin, V.I.

TITLE: Investigation of the dependence of saturation magnetization on the load of nickel-iron alloys with invar composition

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 9, 1961, 10, abstract 9Zh54 ("Sb. tr. Tsentr. n.-i. in-t chernoy metallurgii", 1959, no. 22, 121 - 133).

TEXT: The dependence of the magnetic saturation on the load ($\Delta I_s^o / \Delta p$) is investigated for a number of alloys of the Fe-Ni system with a heat-expansion anomaly. The description of the set-up for measuring the saturation magnetization in dependence on the loading at low and high temperatures is cited. The high value of the $\Delta I_s^o/\Delta p$ effect is concentrated in the main in the narrow region of composition between 30 and 37% Ni and increases as one approaches towards 30% Ni. On the basis of the data obtained for the dependence of $\Delta I_s^o/\Delta p$ upon the composition, temperature, and treatment, and also on the basis of the available data on the coefficient of thermal expansion α_{H_p} the anomalies of thermal expansion

Card 1/2

28554
S/137/61/000/009/031/087
A060/A101

Investigation of the dependence ...

are discussed. A hypothesis is proposed as to the determining influence of the "virtual" coefficient on the quantity α_{H_D} for alloys containing ~30% Ni. Methods are worked out and computation formulae are made more precise for measuring the dependence of saturation magnetization upon the loading at low (nitrogen) temperatures.

A. Rusakov

[Abstracter's note: Complete translation]

Card 2/2

18(7) SOV/48-23-3-22/34

AUTHORS: Vlasova, Ye. N., Fedotov, L. N.

TITLE: An Investigation of the Structure of Iron-Aluminum Alloys With Anomalous Electrical Conductivity (Izucheniye struktury splavov zhelezo-alyuminiy s anomaliyey elektroprovodnosti)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 3, pp 403-404 (USSR)

ABSTRACT: In iron alloys with an Al content of 3-10wt% the formation of the K-state is observed. This is a state which occurs in tempering hardened and deformed alloys, and in which concurrently an anomalous increase in the electrical conductivity takes place. The structure of these alloys is that of a one-phase solid solution with a cubic-body-centered lattice. In the case of more than 10%Al the ordered structure of Fe_3Al is observed. Since the methods of metallography and normal radiography offer no results oscillation X-ray spectrograms and radiographs of diffuse scattering were carried out with monocrystalline samples by using the monochromatic Mo K_α emission. The alloys had the following composition: 1) One containing 10% Al which was close to the boundary between the ordered

Card 1/3

An Investigation of the Structure of Iron-Aluminum Alloys With Anomalous Electrical Conductivity

(Fe_3Al) and the disordered solid solution. In tempering it has a maximum increase of electrical conductivity. 2) A disordered one-phase alloy with 8% Al. 3) An ordered alloy with 12% Al was investigated for the purpose of comparison. On figures 1 and 2 radiographs of alloys with 10 and 12% Al are shown, and it is pointed to the changes which take place due to tempering. This is explained by a change in the Fe_3Al portion. Figures 3 and 4 show Laue diagrams of samples of the alloy with 8% Al. Also in this case the changes due to tempering are visible. From the comparison of the results with those obtained in the papers (Refs 1, 2) it may be concluded that an anomalous change in the electric resistance is found if the alloy with 10% Al is tempered at 300°C (for 20-30 hours). An ordered domain structure is formed (domain dimensions ~100 Å). The increase in the electric resistance is explained by the increase in the electron scattering at the domain boundaries provided the domain dimensions and the electron wavelengths are of the same order of magnitude. In the case of the alloy with 8% Al the change of the electric resistance is connected with the attainment of the short-range order in the arrangement

An Investigation of the Structure of Iron-Aluminum Alloys With Anomalous Electrical Conductivity

of the atoms. Cold casting destroys the short-range order, thus reduces the electric resistance. There are 4 figures and 2 references.

Card 3/3

28553
S/137/61/000/009/030/087
A060/A101

24.2200 also 8904, 8906

AUTHORS: Fedotov, L.N., Zaytseva, G.A.

TITLE: The saturation magnetization of ferromagnetic alloys in the low temperature region

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 9, 1961, 9, abstract 9Zh52 ("Sb. tr. Tsentr. n.-i. in-t chernoy metallurgii", 1960, no. 23, 121 - 128).

TEXT: To clarify the dependence of saturation magnetizability I_s on temperature T in the sub-hydrogen temperature region, three specimens of Fe-Ni alloys were studied, containing 34.6, 68.8 and 75.8% Ni, and one specimen of a Fe-Al alloy with 24.9% Al content. I_s was measured by the compensation (zero, null) ballistic method, ensuring a precision of relative measurements of 0.1-0.2%. The data obtained do not give a basis for definite conclusions as to a functional dependence, besides the linear one, in the indicated region of accuracy. The data of I_s measurements at T = 14°K are of interest, since they support the result on the side of low temperatures for the measurements at T = 20°K. The results of I_s measurement in a field of 1,800 oersteds are given. From these data follows that

Card 1/2

28553
S/137/61/000/009/030/087
A060/A101

The saturation magnetization ...

between room temperature (287°K) and the temperature of liquid nitrogen (78°K) I_s changes by 9%, between the temperature of liquid N_2 and the temperature of liquid H_2 (20.4°K) by 1.6%, and between the temperature of liquid to the temperature of solid H_2 (14°K) by 0.1%. The small observed changes in I_s in the region between 20 and 14°K accord with the preliminary estimated results. In the entire interval of temperatures (290-14°K) the experimental points are situated better in the curve I_s ($T^{3/2}$) than in the curve $I_s(T^2)$*. From a comparison of the graphs obtained the conclusion is drawn that as the temperature goes down, the quadratic dependence of I_s on T varies according to a weaker temperature dependence, but the linear dependence does not match either. It is concluded that the power n in the law $I_s \sim T^{n**}$ should lie between the limits $1 < n < 2$.

A. Rusakov

[Abstracter's notes: Complete translation.
* Apparent misprint: corrected from $I(T^2)$.
** Apparent misprint: corrected from $I \sim T^n$.]

Card 2/2

S/048/61/025/012/021/022
B125/B112

AUTHORS: Fedotov, L. N., Popova, V. P., and Molotilov, B. V.

TITLE: Influence of mechanical action on the magnetic structure and on the properties of alloys

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 12, 1961, 1518-1523

TEXT: The influence of mechanical stresses and the conditions of stabilization of the magnetic properties are studied. According to Ye. I. Kondorskiy (Zh. eksperim. i teor. fiz., 37, 1110 (1959)) the degree of the stability of magnetization of a ferromagnetic, placed in a field of elastic stresses, can be changed by choosing an adequate magnetizing procedure. The influence of compressing stresses directed perpendicular to the magnetic flux on the permeability in different fields in case of magnetization on the principal curve and on the ideal curve of the alloys 79НМА (79NMA) and 76НХА (76NKhD) (magnetostriction $\lambda_s \sim 0.2 \cdot 10^{-6}$) was studied. The boundaries of the principal domains are less displaced under the action of external stresses than the boundaries of subdomains and of additional

Card 1/3

S/048/61/025/012/021/022
B125/B112

Influence of mechanical action ...

domains. Simplifying the magnetic structure (by adequate processing) of an alloy by converting it completely into 180°-domains, increases the stability of the magnetic properties, impair, however, the quality. Simplifying the magnetic structure can most easily be achieved by diminishing the thickness of the material. Since the internal field acting on the 180°-boundaries is equal to zero, the 180°-boundaries are much less displaced by elastic stresses than the 90°-boundaries. In searching magnetically stable materials, special attention should be paid to such materials as have a suitable optimum amount of defects. The alloys tending to brittleness (such as iron with high silicon content, iron containing 16% Al and iron alloyed with Si and Ni) are magnetically more stable. Magnetic stability may be diminished by inclusions acting as stress concentrators. Due to considerable irreversibility, the fixation of the 180°-boundaries of the domains by inclusions must be avoided in plastic alloys and is applicable only in case of brittle alloys. The dependence of the a-c resistance on alloys 68H (68N), 79NMA, subjected to thermal pre-treatment in vacuum, and on an alloy containing 79% Ni, 5% Re, 16% Fe has also been determined by the method assumed by the authors' Institute to be the optimum method. The resistivity of alloyed specimens

Card 2/3

containing rhenium and the alloy 68N were most dependent on stresses. $\Delta R/R \approx 15\%$, for $\sigma = 7$ kg mm^{-2}. The rhenium-containing alloy has the following advantages: (1) Its higher resistivity, (2) in the interval 1 to 8 kg mm^{-2} its active resistivity is a linear function of load. In rhenium-containing alloys, the galvanoelastic effect is stronger than in molybdenum-containing alloys (79NMA). The sensitivity of the strain gage constructed from rhenium-containing alloys is expected to exceed that of strain gages made from Constantan alloys by two orders of magnitude. There are 8 figures and 3 Soviet references.

ASSOCIATION: Institut pretsizionnykh splavov TsNIIChermet (Institute of Precision Alloys of the TsNIIChermet)

AUTHORS: Zaytseva, G.A., Fedotov, L.N. S/776/62/000/025/001/025

TITLE: The Hall effect, electrical resistance, and saturation magnetization of alloys with anomalous thermal expansion.

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov. no. 25. Moscow, 1962. Pretsizionnyye splavy. pp. 33-40.

TEXT: This experimental investigation was devoted to a study of the electrical conductivity, the Hall effect, and the magnetic saturation of alloys of the system Fe-Ni-Mn that lie along the line Fe_2Ni-Ni_3Mn in the phase diagram and which lie in the region of the γ solid solution. The study employs the Turnakov-Trenov phase diagram; the chemical compositions of the alloys in weight and atom-% are tabulated. The specimens were tested in 2 states: (1) After vacuum anneal, comprising 4-hr holding at 1,100°C, cooling to 500° at 50°/hr, then stepwise cooling with 2-hr holds at 450, 400, 350, 300, and 250°; (2) after cold working (80% deformation for wires and plates). Measurements of the Hall effect were performed by the Volkenshteyn-Fedorov method which is described here in detail. The error in the determination of the Hall constant R is estimated to be appx. 1.5% of the computed value. The

Card 1/3

magnetization was measured by the ballistic method on ellipsoidal specimens. The electrical resistance was measured on 0.2-mm-diam specimens appx.50 cm long. Accuracy of measurement: appx. 3%; accuracy of repeat measurements made on [illegible] specimen 0.4%. Hall-effect measurements were made at room T and at N T (20°K), measurements of magnetization and electrical resistance (ER) were made at both Ts, plus the H T (20°K). The graphs of the saturation magnetization show a monotonic change up to a composition corresponding to appx. 10% Mn, at which point a break occurs, beyond which the changes in magnetization differ substantially between annealed and strain-hardened specimens. The ER graphs show a maximum at 10% Mn for all specimens; beyond that value a different behavior obtains for annealed and strain-hardened specimens. The Hall constant R also attains a maximum at 10% Mn, with the value of that maximum varying with T. The R of strain-hardened alloys is higher than that of annealed alloys for all compositions except for the Mn-free alloy. It is noted that increased values of the ER in the region of 10%-Mn alloys correspond to a reduction in the value of the thermal [illegible] coefficient (TEC). Inasmuch as there is no phase-transformation boundary in the region investigated, it is postulated that the alloy with 10% Mn lies in a region in which a change in atomic and electronic structure occurs. Confirmation of this postulate is found in the conservation of the anomaly of the lattice parameter at high T. It is noted that the Hall constant is the most structure-change-sensitive

Card 2/3

parameter. Should the relative maximum in ER and galvanomagnetic effects be confirmed by subsequent experiments, then its identification should open new possibilities in searches for alloys with relatively small values of the TEC. There are 10 figures, 1 table, and 8 references (6 Russian-language Soviet and 2 English-language: Smith, I. Physica, no.17, 1951, 612; Owen, E., Yates, E., Sully, A., Roy. Phys. Soc., Proc., no.49, 1937, 316).

MOLOTILOV, B.V.; FEDOTOV, L.N.

Magnetic and dislocation structure of alloys. Sbor. trud. TSNIICHM no.25:5-23 '62. (MIRA 15:6)
(Alloys--Metallography) (Domain structure)

S/776/62/000/025/002/025

AUTHORS: Popova, V.P., Fedotov, L.N.

TITLE: The dependence of the electrical resistance of Iron-Nickel alloys on the magnetic field and mechanical stresses.

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov. no.25. Moscow, 1962. Pretsizionnyye splavy. pp.41-52.

TEXT: The purpose of the present experimental investigation is a determination of the change in electrical resistance (ER), as determined both on direct and on alternating current, as a function of the magnetic field and the stress imposed on specimens of Fe-Ni alloys with 79% Ni alloyed with Mo, Re, and Mn. The ultimate objective of this investigation is the development of magnetic-field and stress transducers with the use of binary Fe-Ni alloys. The galvanomagnetic and galvanoelastic effects under DC (ohmic resistance) were measured by the potentiometric method with an accuracy of 0.05%. The active resistance under AC was measured on a bridge circuit (illustrated). Accuracy: 0.1%. The tensile specimens, wires 0.2-mm diam, were tested in the same quartz tubes in which they had undergone heat treatment for uniformity. A tensile load was applied to each specimen, and the measure-

Card 1/2

ment was repeated with intermediate demagnetizations of the specimens. The chemical composition of the 11 specimens tested is tabulated. 3 alternative heat-treatment methods were employed; details are specified. The galvanomagnetic and galvanoelastic effects of the various specimens are shown graphically as functions of the magnetic field and the stress. Both the longitudinal galvanomagnetic and the galvanoelastic effects change in the same sense: The effects are increased with an increase of the field strength H and the stress σ, respectively. With increasing tensile stress, the magnetic effect (vs. H) decreases. Graphs of the changes of the respective effects, as functions of the content of an alloying element, show that alloying of the alloy with Re, Mo, and Mn (up to 3%), decreases the magnitude of the galvanomagnetic effect. The effect of the anneal is discussed separately for the 3 alloying elements. The dependence of the properties of the various alloys on the heat treatment permits the finding of an optimal heat-treatment regime to obtain a prescribed value of the galvanomagnetic effect. The investigation of the dependence of the active resistance under AC on the magnetic field is not yet completed. It can only be stated that alloys with small Re content have a satisfactory linear relationship between the ER and the field in the region of 0.1 to 0.7 ϕ. There are 5 figures, 1 table, and 6 references (3 Russian-language Soviet, 1 German, and 2 English-language, of which 1 is in Russian translation).

EWT(m)/EWP(k)/EWP(e)/EWP(t)/ETI IJP(c) JD/JG/GS (3)

ACC NR: AP6024389 SOURCE CODE: UR/0020/66/169/002/0316/0319

AUTHOR: Andrianov, V. V.; Zenkevich, V. B.; Sokolov, V. I.; Sychev, V. V.; Tovma, V. A.; Fedotov, L. N. 29 B

ORG: Scientific Research Institute for High Temperatures (Nauchno-issledovatel'skiy institut vysokikh temperatur); Central Scientific Research Institute for Ferrous Metallurgy im. I. P. Bardin (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii)

TITLE: A superconducting solenoid from a three-component alloy generating fields of over 75,000 Oe

SOURCE: AN SSSR. Doklady, v. 169, no. 2, 1966, 316-319

TOPIC TAGS: superconductivity, strong magnetic field, niobium alloy, titanium alloy, zirconium containing alloy, SOLENOID

ABSTRACT: A superconducting magnet has been constructed which generates magnetic fields of more than 75,000 oe using wire made from an alloy of niobium (65%), titanium (15%), and zirconium (about 9%), the remainder being other components selected for their metallurgical properties. The critical temperature of the material is 9.8—10K. Because of its relatively low brittleness, the 0.25-mm o.d. copper-plated wire could be drawn by standard methods into four-kg coils

Card 1/2 UDC: 537.312.62

L 38436-66
ACC NR: AP6024389

representing a total length of 12 km. After cold working in vacuum or in a helium atmosphere, both types of wire were coated with a polyester varnish to add a 0.03-mm layer to the diameter. The magnet, with a 16-mm inner diameter, consisted of 3 concentric sections wound onto aluminum-alloyed formers. The inner section alone, using 17,762 turns of vacuum cold-worked wire, generated 65,000 oe; the two other sections made of 15,210 and 10,480 turns of wire cold-worked in a helium atmosphere, and wound on a common former, generated 43,500 oe. The maximum magnetic-field intensity of the magnet was 76,300 oe. Even though the solenoid has been repeatedly driven normal, no damage has been observed. Orig. art. has: 4 figures. [ZL]

SUB CODE: 20/ SUBM DATE: 16Apr66/ OTH REF: 001/ ATD PRESS: 5042

Card 2/2

L 02991-67 EWT(m)/EWP(t)/ETI IJP(c) MJW/JD/JG

ACC NR: AP6033155 SOURCE CODE: UR/0105/66/000/010/0082/0083

AUTHOR: Gorina, N. B.; Gruznov, Yu. A.; Kolobanov, V. V.; Matorin, V. I.; Prokoshin, A. F.; Rad'kov, A. I.; Sokolov, V. I.; Trat'yakov, B. N.; Fedotov, L. N.; Khromov, S. M.; Kuleshov, V. F.

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

TITLE: The 65BT superconducting alloy

SOURCE: Elektrichestvo, no. 10, 1966, 82-83

TOPIC TAGS: superconducting alloy, superconductivity

ABSTRACT: A new, relatively low cost Nb-Ti based alloy, designated 65BT, which meets all the major requirements for superconductors has been developed. Because of its properties it can be used in 1) magnetizing devices, such as superconducting solenoids, for field strengths varying from 20 to 80 koe, and 2) wires 0.1—0.3 mm in diameter and up to 12,000 m long and tapes 5 μ thick. The alloy, which contains 65% niobium, 25% titanium, and several other components, is produced in

Card 1/2 UDC: 537.312.62

L 02991-67
ACC NR: AP6033155

an arc furnace and, after thermal processing, is cold drawn. For use in superconducting solenoids, the alloy requires a 0.02—0.05-mm copper coating. Orig. art. has: 1 table.

SUB CODE: 20/ SUBM DATE: none/ ATD PRESS: 5099

awm

Card 2/2

ACC NR: AP7001546 SOURCE CODE: UR/0020/66/171/003/0566/0569

AUTHOR: Alekseyevskiy, N. Ye. (Corresponding member AN SSSR); Dubrovin, A. V.; Mikhaylov, N. N.; Sokolov, V. I.; Fedotov, L. N.

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

TITLE: Basic properties of 65BT-type superconducting alloy wire in specimens and solenoids

SOURCE: AN SSSR. Doklady, v. 171, no. 3, 1966, 566-569

TOPIC TAGS: superconducting alloy, niobium titanium alloy, zirconium containing alloy, niobium titanium alloy wire, alloy wire superconducting property

ABSTRACT:
A method of protecting superconductors from damage during the transition from superconducting to normal state has been developed. The 65BT superconducting niobium-titanium alloy wire (65% niobium and some zirconium) was developed by the Institute of Precision Alloys at the Central Scientific Research Institute of Ferrous Metallurgy. At 293, 77 and 20K the wire has a tensile strength of 81, 140 and 192 kg/mm^2, a notch toughness of 18.5, 5.8 and 4.4 kg/cm^2, and a resistivity of 70, 59 and 56·10^{-6} ohm·cm, respectively. The critical temperature of the wire is 9.7K and the critical magnetic field at 4.2K is 90 kilo-oersteds. It was found that a thin copper coating effectively

Card 1/2 UDC: 537.312.62.

ACC NR: AP7001546

prevents wire damage during the transition from the superconducting to the normal state. Wire 0.25 mm in diameter was coated with a layer of copper, 10—20 μ thick, and used for solenoids with field intensities of 19 and 54 kilo-oersteds. The solenoids withstood long periods of operation and proved to be stable and reliable. They were used in studying galvanomagnetic properties of pure metals in semiconductors, in investigating the critical parameters of superconducting materials, etc. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 11, 09, 20/ SUBM DATE: 30Jul66/ ORIG REF: 001/ OTH REF: 003
ATD PRESS: 5111

Card 2/2

FEDOTOV, L.P.

Calculating the natural vibration frequency of tubular springs and spring manometers. Izm. tekh. no.8:13-15 Ag '65. (MIRA 18:9)

FEDOTOV, L.V., inzh. (Omsk)

Experience in using rail defectoscopes. Zhel. dor. transp. 37 no.8:68-69 Ag '55. (MIRA 12:8)
(Railroads--Rails--Testing)

FEDOTOV, L.V.

FEDOTOV, L.V. (Omsk).

On guard for safety. Put' put. khoz. no.1:18-20 Ja '58. (MIRA 11:1)

1. Starshiy inzhener po defektoskopii Omskoy dorogi.
(Railroads--Maintenance and repair)

FEDOTOV, L.V.

Electricity for homes of railroad workers. Put' i put.khoz. 4 no.6:38-39 Je '60. (MIRA 13:7)

1. Starshiy inzhener sluzhby puti Omskoy dorogi, Omsk.
(Railroads--Buildings and structures--Lighting)

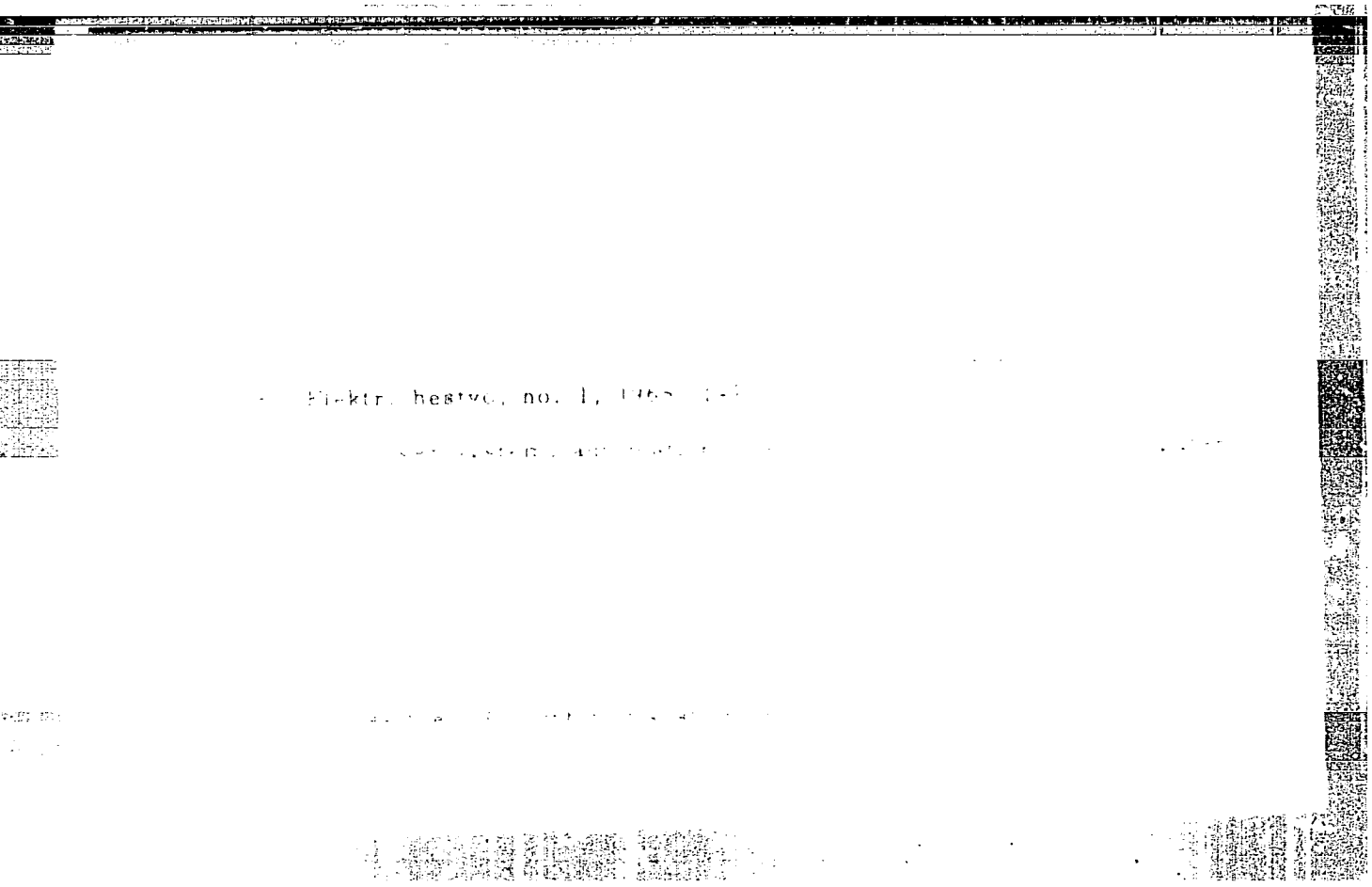
FEDOTOV, L.V., inzh.

Use of radio techniques in frequency and power regulating systems. Energ. i elektrotekh. prom. no.1:45-47 Ja-Mr'64. (MIRA 17:5)

SIN'KOV, V.M., kand. tekhn. nauk; FEDOTOV, L.V., inzh.; [illegible]NIK, A.F., inzh.

First results of the industrial tests of a computer system for determining the efficiency of boilers fired by pulverized coal. Energ. i elektrotekh. prom. no.3:12-17 Jl-S '64.

(MIRA 17:11)



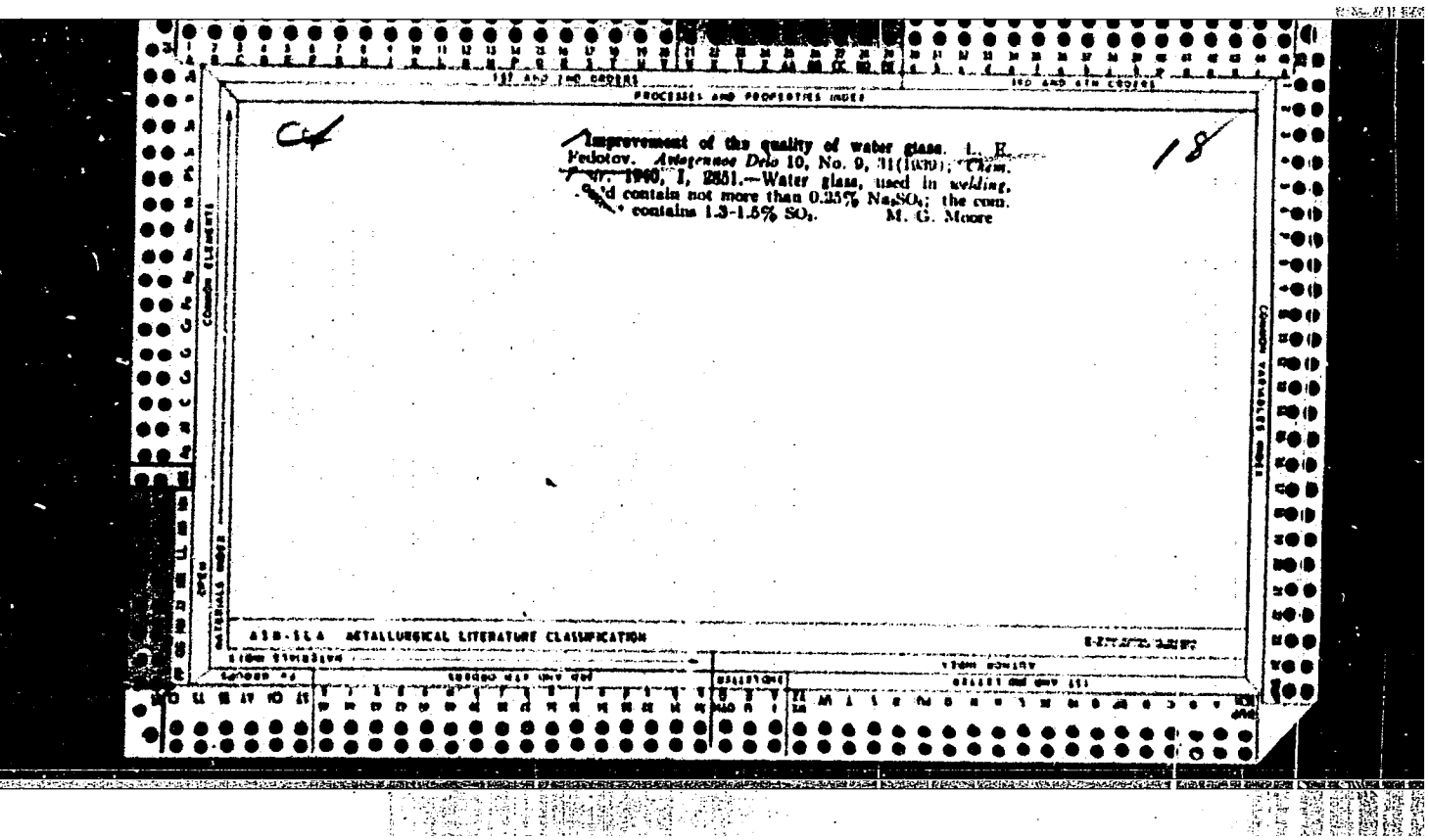
SIN'KOV, V.M., kand.tekhn.nauk; FEDOTOV, L.V., inzh.; TSIPTSYURA, R.D., inzh.

Control systems of automated thermal electric power plants.
Energ. i elektrotekh. prom. no.2:3-6 Ap-Je '65.
(MIRA 18:8)

SIN'KOV, V.M., kand. tekhn. nauk; FEDOTOV, L.V., kand. tekhn. nauk;
YANIK, A.F., inzh.

Principles of the construction of a system for calculating load distribution efficiency between boiler units. Energ. i elektrotekh. prom. no.4:8-10 O-D '65.

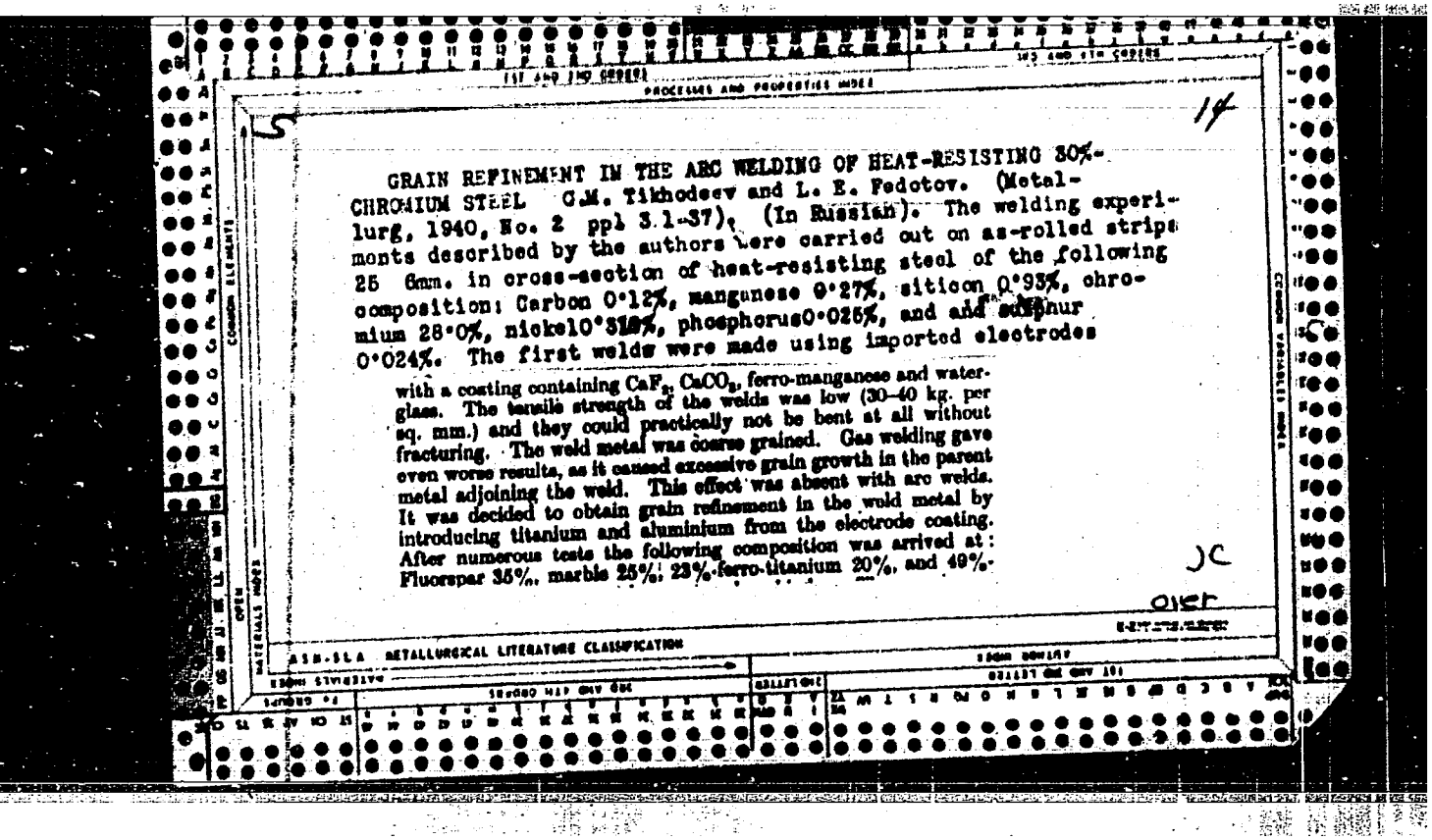
(MIRA 19:1)



PROCESSES AND PROPERTIES INDEX

Improvement of the quality of water glass. L. F. Fedotov. *Avtogennoe Delo* 10, No. 9, 31(1939); *Chem. Abs.*, 1940, I, 2851.—Water glass, used in welding, should contain not more than 0.25% Na_2SO_4; the com. contains 1.3-1.5% SO_3. M. G. Moore

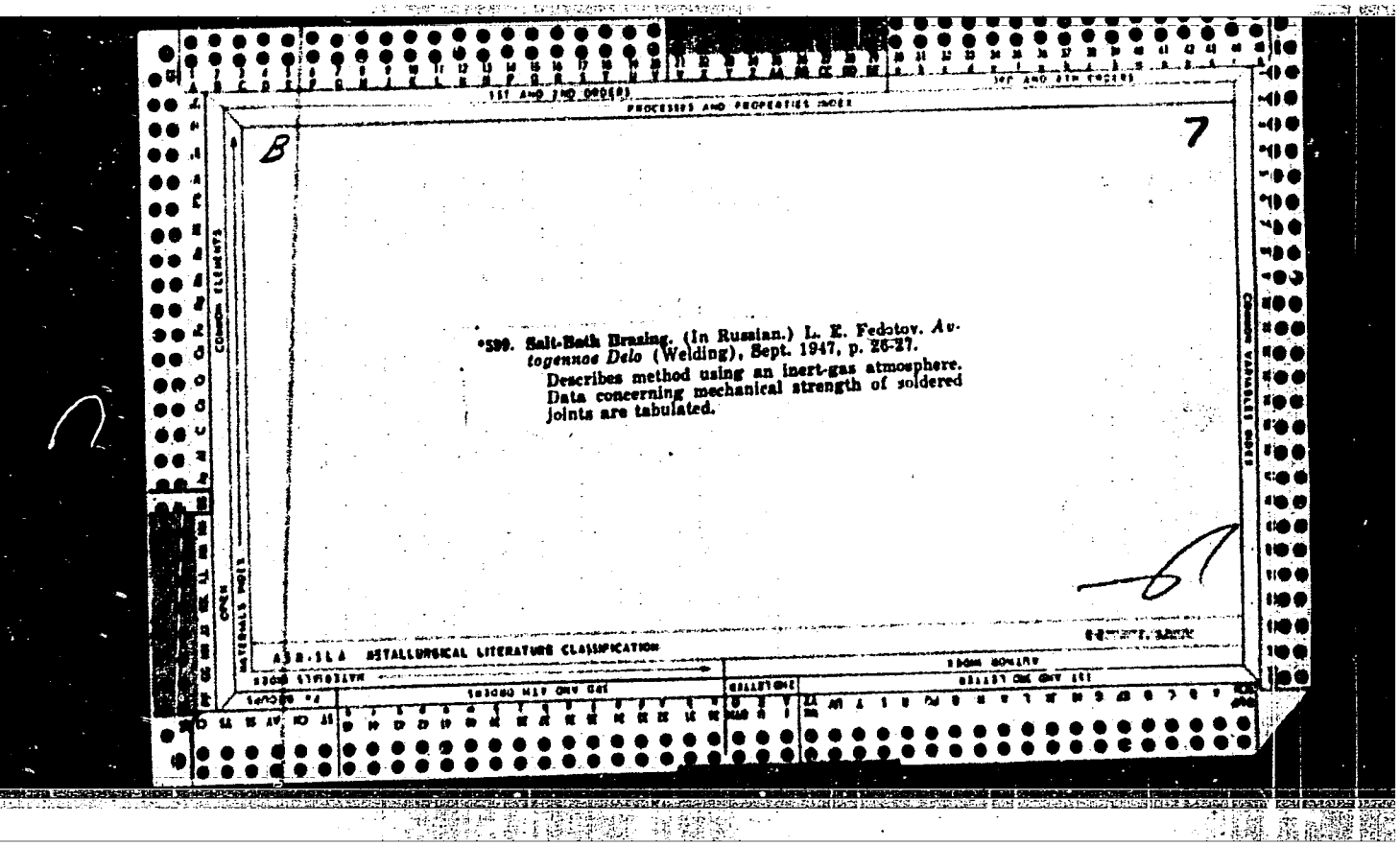
ASB-ISLA METALLURGICAL LITERATURE CLASSIFICATION



GRAIN REFINEMENT IN THE ARC WELDING OF HEAT-RESISTING 30%-CHROMIUM STEEL G.M. Tikhodeev and L. E. Fedotov. (Metallurg, 1940, No. 2 pp1 3.1-37). (In Russian). The welding experiments described by the authors were carried out on as-rolled strips 25 6mm. in cross-section of heat-resisting steel of the following composition: Carbon 0·12%, manganese 0·27%, silicon 0·93%, chromium 28·0%, nickel 0·51%, phosphorus 0·026%, and and sulphur 0·024%. The first welds were made using imported electrodes with a coating containing CaF_2, $CaCO_3$, ferro-manganese and water-glass. The tensile strength of the welds was low (30–40 kg. per sq. mm.) and they could practically not be bent at all without fracturing. The weld metal was coarse grained. Gas welding gave even worse results, as it caused excessive grain growth in the parent metal adjoining the weld. This effect was absent with arc welds. It was decided to obtain grain refinement in the weld metal by introducing titanium and aluminium from the electrode coating. After numerous tests the following composition was arrived at: Fluorspar 35%, marble 25%, 23%-ferro-titanium 20%, and 49%-

FEDOTOV, L.

An interesting Soviet paper on welding is: Joining Chrome and Nickel Stainless with Plain Carbon Steels by Welding, by L. FEDOTOV from AVTOGENNOYE DELO, Vol 12, #5, 1941.



•599. **Salt-Bath Brazing.** (In Russian.) L. E. Fedotov. *Avtogennoe Delo* (Welding), Sept. 1947, p. 26-27.
Describes method using an inert-gas atmosphere. Data concerning mechanical strength of soldered joints are tabulated.

K- Jenning

Met. Rev.
1952

121-K. The Use of Salt Baths for Soldering of Metals. (In Russian.) I. E. Fedotov. *Stankt i Instrument*, v. 22, Mar. 1951, p. 33-34.
Briefly described. (K7)

FEDOTOV, L. E.

Svarka khromistykh zharoupornykh stalei. (Leningrad) Leningradskoe gazetno-zhurnal'noe i knizhnoe izd-vo, 1945. 67 p. illus.
At head of title: Leningradskii dom tekhniki mashinostroeniia NKMV.
Bibliography: p. 40-(41)

Welding of heat-resistant chromium steels.

DLC: TS227.F4

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

USSR/Engineering - Welding Aug 51

"Conference on Heat Treatment of Welded Products in Leningrad," L. Ye. Fedotov, Engr

"Avtogen Delo" No 8, pp 31,32

Conference was organized by LONITOS and Giprom-ashpribor with representatives of various plants and institutes. One decision states that heat treatment of welded products and structures made of low-carbon steel, does not improve their efficiency and is not required for preventing warping of welded parts. Preliminary heat treatment

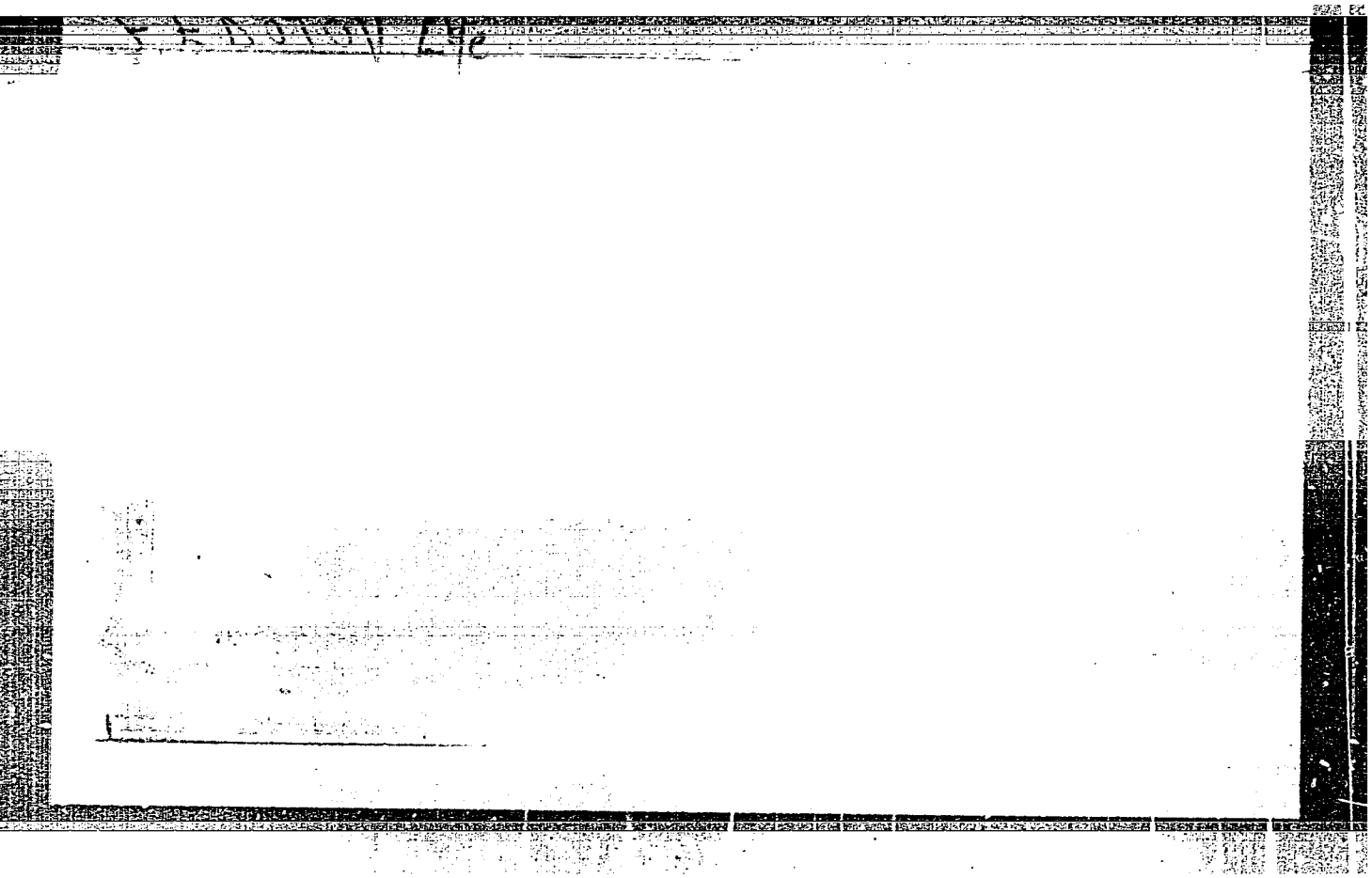
200758

USSR/Engineering - Welding (Contd) Aug 51

is necessary only in individual cases where long welded structures of small thickness are machined.

200758

FEDOTOV, L. YE.



FEDOTOV, L.E.

135-8-16/19

SUBJECT: USSR/Welding

AUTHOR: Fedotov, L.E., Engineer.

TITLE: Scientific-Technical Conference on Welding of Non-Ferrous and Light Metals and Their Alloys. (Nauchno-tekhnicheskaya konferentsiya po svarke tsvetnykh i legkikh metallov i ikh splavov).

PERIODICAL: "Svarochnoye Proizvodstvo", 1957, #8, pp 39-40 (USSR)

ABSTRACT: The article contains a brief summary of a conference on welding of non-ferrous metals and their alloys, held in LENINGRAD from 22 to 24 April 57. The conference was organized by the welding sections of the shipbuilding and machinebuilding industries and by the regional "NTO"-Board of the Machinebuilding Industry in LENINGRAD.

The 26 reports at the conference dealt with the most important recent achievements of the industry in the field of welding non-ferrous metals and their alloys, for example investigation of welding processes, welding technologies and machinery especially developed for welding copper, aluminum, titanium and their alloys.

Card 1/2

SOV-135-58-2-13/18

AUTHORS: Fedotov, L. Ye., Engineer and Yevstaf'yev, S. G., Technician

TITLE: Argon-Arc Welding of Aluminum Bus Bars (Argono-dugovaya svarka alyuminiyevykh shinoprovodov)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 2, pp 45 - 46 (USSR)

ABSTRACT: Information is presented on the technology and results of tests on argon-arc welding with tungsten electrodes of aluminum bus-bars. The following conclusions are made: the described method can be used for welding in bottom, vertical and overhead position and has marked advantages over gas-welding, i.e. there is no need of flux, no subsequent cleaning of the joint, better quality of the seams, higher efficiency and reduced cost of work. There are 2 tables.

ASSOCIATION: Leningradskiy filial Instituta "Orgenergostroy" (The Leningrad Branch of the "Orgenergostroy" Institute)

Card 1/1 1. Aluminum--Arc welding 2. Arc welding--Electrodes

Fedotov, L. Ye.

AUTHOR: Fedotov, L.Ye., Engineer 110-4-17/25

TITLE: Argon-arc Welding of Aluminium Busbars (Argonodugovaya svarka shinoprovodov iz alyuminiya)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, No. 4, pp. 52 - 54 (USSR).

ABSTRACT: It is not easy to make joints in aluminium busbars. Special fluxes have to be used for acetylene welding of aluminium and it is very difficult to employ electric arc welding with carbon or metal electrodes. One of the best methods is that of welding under a protective layer of argon gas. Argon-arc welding uses no flux and can be done with tungsten electrodes that do not melt or with electrodes of other metals that do. Tests were made on aluminium channels, sizes 12 and 17, with wall thicknesses of 6 and 8 mm, respectively, using tungsten electrodes and depositing aluminium wire. An a.c. welding set was used, having the circuit shown in Fig.1. An a.c. welding set is simpler than d.c. and has other advantages. An oscillator in the a.c. circuit ensures stable burning. In preliminary tests, it was difficult to achieve the necessary heating because of the high thermal conductivity of aluminium. The tests were made on aluminium channels in all positions, up, down and horizontal. The external appearance of welded joints made in

Card1/2

the various positions are shown in Fig.2. Specimen joints were made to standard ГОСТ-6996-54, for testing in tension, in bending and for hardness tests. The results are given in Table 1 and the appearance of the specimens after tensile tests is shown in Fig.3. All the specimens for bending withstood 180° bends, as shown in Fig.4. The Brinell hardness of the weld and basic metal was about the same. Macro- and micro-examination of the joints revealed no defects in the metal. The method of argon-arc welding is recommended for aluminium busbars. Engineers I.N. Bondin, S.G. Yefstaf'yev and B.A. Rabotnikov participated in the work.
There are 2 tables, 5 figures and 2 Russian references.

ASSOCIATION: Leningrad Branch of "Orgenergostroy" ("Orgenergostroy", Leningradskiy filial)

SUBMITTED: November, 18, 1957

AVAILABLE: Library of Congress

YEVSTAF'YEV, S.G., inzh.; FEDOTOV, L.Ye., inzh.

Results of experiments in welding aluminum bus bars. Elek.sta. 29 no.11:31-33 N '58. (MIRA 11:12)
(Bus conductors (Electricity)--Welding)

GUSAROV, N.N., inzh. Prinimali uchastiye: ANDREYEV, V.V., inzh.; RABOTNOV, B.A., inzh.; FEDOTOV, L.Ya., inzh., nauchnyy red. BALDIN, V.A., retsenzent; BRODSKIY, A.Ya., kand.tekhn.nauk, retsenzent; SAVALOV, I.G., kand.tekhn.nauk, retsenzent; LEVI, S.S., kand.tekhn.nauk, retsenzent; SOKOLOV, V.S., kand.tekhn. nauk, retsenzent; LEBEDEV, Yu.I., retsenzent; RAZUMOVA, E.D., inzh., retsenzent; DOLGIKH, V.G., inzh., retsenzent; MAKSIMOV, K.G., red.izd-va; PUL'KINA, Ye.A., tekhn.red.

[Provisional instructions on using gamma rays in controlling welded joints of reinforcements in reinforced-concrete construction elements] Vremennaia instruktsiia po kontroliu svarnykh soedinenii armatury zhelezobetonnykh konstruktsii prosvechivaniem gamma-luchami. Leningrad, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1960. 46 p.
(MIRA 14:2)

1. Russia (1923- U.S.S.R.) Ministerstvo stroitel'stva elektrostantsiy. Tekhnicheskoye upravleniye. 2. TSentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy (for Baldin, Brodskiy). 3. Chlen-korrespondent Akademii stroitel'stva i arkhitektury SSSR (for Baldin). 4. VNIIOMS (for Savalov, Levi). 5. TSentral'naya nauchno-issledovatel'skaya laboratoriya Gosgortekhnadzora (for Sokolov). 6. Zamestitel' glavnogo sanitarnogo inspektora, Sanitarnaya inspektsiya SSSR (for Lebedev). 7. TsNIP Ministerstva stroitel'stva elektrostantsiy (for Razumova). 8. Trest Sevzapenergomontazh (for Dolgikh).
(Gamma rays--Industrial applications) (Reinforcing bars--Welding)

FEDOTOV, L.Ya., inzh.

Electric conductity of welded copper joints. Svar. proizv. no.2:35 F '60. (MIRA 13:6)

1. Orgenergostroy, Leningradskiy filial.
(Copper--Welding) (Electric conductors--Welding)

FEDOTOV, L.Ye.; YEVSTAF'YEV, S.G.; VOROB'YEV, V.V.; KARPOV, V.S.; VEYSMAN, I.A.

Welding bus bar compensators. Avtom.svar. 13 no.7:87-90 Jl '60. (MIRA 13:7)

1. Trest "Gidroelektromontazh" (for Veysman). 2. Leningradskiy filial instituta "Orgenergostroy" (for all except Veysman).
(Bus conductors(Electricity)--Welding)

S/137/62/000/004/168/201
A154/A101

AUTHORS: Fedotov, L.Ye.; Vorob'yev, V.V.

TITLE: The effect of the shielding medium on the heat influx into an article during welding

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 26, abstract 4E132 ("Inform. byul. Vses. in-t po proyektir. organiz. energ. str-va", 1960, no. 4, 14 - 16)

TEXT: The use of N_2 as a shielding medium for welding Cu with a W electrode is of great practical interest, since on the one hand N_2 is very cheap, non-scarce and safe gas, and on the other hand welding in N_2 permits greatly increasing the heat influx into the article as compared with welding in argon for the same amount of electric power supplied.

V. Klyuchnikova

[Abstracter's note: Complete translation]

Card 1/1

S/135/61/000/009/003/006
A006/A101

AUTHORS: Fedotov, L.Ye., Engineer, Vorob'yev, V.V.

TITLE: On the effective heat efficiency during arc welding of copper in shielding gases

PERIODICAL: Svarochnoye proizvodstvo, no. 9, 1961, 11 - 12

TEXT: For the purpose of replacing argon by nitrogen in gas shielded welding of copper, experiments were made to determine the effective efficiency of heating 12 mm thick M2 copper plates, during welding with non-consumable tungsten electrodes of 5 mm in diameter, using 400 - 460 amps current, in argon and nitrogen gas shield. The heating time varied within 15 to 39 seconds. The effective efficiency of heating the work by the arc heat was determined by comparing the heat equivalent of full electric power with heat content of the heated specimen measured in a calorimeter

$$\eta = \frac{Q}{0.24\, I_w U_a t_w};$$

$Q = Q_o + Q_{copper}$, where I_w is the welding current in amps; U_{arc}

Card 1/2

S/135/61/000/009/003/005
A006/A101

AUTHORS: Fedotov, L.Ye., Engineer, Vorob'yev, V.V.

TITLE: On the effective heat efficiency during arc welding of copper in shielding gases

PERIODICAL: Svarochnoye proizvodstvo, no. 9, 1961, 11 - 12

TEXT: For the purpose of replacing argon by nitrogen in gas shielded welding of copper, experiments were made to determine the effective efficiency of heating 12 mm thick M2 copper plates, during welding with non-consumable tungsten electrodes of 5 mm in diameter, using 400 - 460 amps current, in argon and nitrogen gas shield. The heating time varied within 15 to 39 seconds. The effective efficiency of heating the work by the arc heat was determined by comparing the heat equivalent of full electric power with heat content of the heated specimen measured in a calorimeter

$$\eta = \frac{Q}{0.24\, I_w U_a t_w};$$

$Q = Q_a + Q_{copper}$, where I_w is the welding current in amps; U_{arc}

Card 1/2

is the arc voltage in v, t_w is the welding time in sec; $Q_c = (180 + G_w)(T_{fin} - T_{in})$, is the heat content of the calorimeter in cal [180 cal/degree is the calorimeter constant]; G_w is the water mass in the calorimeter tank (12,500 g), T_{in} and T_{fin} are the initial and final water temperature in the calorimeter tank after immersion of the specimen, in °C; $Q_{copper} = G_{copper} C_{copper} (T_{fin} - T_{in})$ is the heat content of the specimen to be welded (G_{copper} is the plate weight, 1,370 g, C_{copper} is the specific heat capacity of copper, 0.94 cal/g.degree C). The experiments showed that the effective efficiency during the welding of copper in nitrogen atmosphere was by 20 - 30% higher than in argon. Therefore the use of nitrogen as a shielding gas is of practical interest for the described purpose, since nitrogen makes it possible to considerably increase the heat supply to the work piece as compared to argon, at the same values of the electric power supplied. There are 3 tables and 5 Soviet-bloc references.

ASSOCIATION: Leningradskiy filial instituta "Orgenergostroy" (The Leningrad Branch of the Orgenergostroy Institute)

FEDOTOV, L.Ye., inzh.; KARPOV, V.S., tekhnik

Semiautomatic argon-arc welding of aluminum busbars by means of a consumable electrode. Svar. proizv. no.12:20-22 D '62. (MIRA 15:12)

1. Leningradskiy filial Vsesoyuznogo institut po proyektirovaniyu organizatsiy energeticheskogo stroitel'stva.
(Bus conductors (Electricity)—Welding)
(Aluminum—Welding)

VAYNERMAN, Abram Yefimovich; FEDOTOV, L.Ye., red.

[Technology of electric arc welding of copper and steel] Tekhnologiia elektrodugovoi svarki medi so stal'iu. Leningrad, 1963. 19 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Seriia: Svarka, rezka i paika metallov, no.7) (MIRA 17:4)

FEDOTOV, L.Ye., kand.tekhn.nauk; KAKSTOV, A.A., inzh. [deceased]; TIMOFEYEV, B.T., inzh.

Welding concrete reinforcement metal in carbon dioxide. Svar.proizv. no.11:26-28 N '64. (MIRA 18:1)

1. Leningradskiy filial Vsesoyuznogo instituta po proyektirovaniyu organizatsiy energeticheskogo stroitel'stva.

FEDOTOV, M.; SHIFRIN, I.

Concepts of distribution and redistribution of national income.
Fin. SSSR 18 no.12:40-47 D '57. (MIRA 11:1)
(Income)

DRUGALEVA, Z.; ZHUKOVA, L.; FEDOTOV, M.

Specialization of machinery manufacturing in an economic region.
Vop. ekon. no.4:59-68 Ap '58. (MIRA 11:5)

1. Ural'skiy filial AN SSSR (for Drugaleva, Zhukova). 2. Chelyabinskiy sovnarkhoz (for Fedotov).
(Chelyabinsk Province--Machinery industry)

ZAYTSEV, A.; FEDOTOV, M.

Planning and establishing working capital norms for collective farms. Fin. SSSR 20 no.5:31-38 My '59. (MIRA 12:10)
(Collective farms--Finance)

37356
S/194/62/000/003/033/066
D256/D301

9.4120

AUTHORS: Kapralov, I. I., Fedotov, M. A. and Markov, Yu. G.

TITLE: A high-frequency gas-discharge device

PERIODICAL: Referativnyy zhurnal, Avtomatika i radioelektronika, no. 3, 1962, abstract 3-3-79ye (Izv. Sibirsk. otd. AN SSSR, 1961, no. 7, 36-40)

TEXT: The device comprises a gas-discharge diode made of a glass tube 5 mm in diameter and a length of 54 mm, provided with 0.6 mm diameter molybdenum rode electrodes sealed into the ends of the tube, the distance between the electrodes being 26 mm. A high-frequency electrode, e.g. a ring made of foil, was placed or glued onto the outside of the tube and connected to a 200 - 500 V, 167 or 520 kc/s supply. The end-electrodes were connected to the grids of a double triode working in a bridge circuit. The electrodes were connected to the "earth" of the system by small capacitors ($C \leqslant 10$ pF). At a difference of C and ΔC a d.c. voltage U_β was registered at the output of the circuit depending on the values of C, ΔC, the

Card 1/2

A high-frequency ...

S/194/62/000/003/033/066
D256/D301

frequency and the position of the H.F. electrode. It was shown that the occurrence of the d.c. voltage at the output of the diode resulted from a nonuniform charge distribution in the volume of the diode. The sensitivity of the system was: up to 20 V/pF in capacitance or 5 V/mm in mechanical movement. The error of the experimental instruments exceeded 5%. The possibility is considered of applying the diode as an electric transducer of nonelectric quantities. 1 reference. [Abstracter's note: Complete translation.]

Card 2/2

ACCESSION NR: AT4002328 S/3036/63/000/000/0050/0057

AUTHOR: Konradi, G. G. (Moscow); Fedotov, M. A. (Moscow)

TITLE: Development of methods and investigation of mechanical properties of graphites and carbides at temperatures up to 3200°C

SOURCE: Voprosy* vy*sokotemperaturnoy prochnosti v mashinostroyenii. Vtoroye nauchnotekhnicheskoye soveshchaniye, 1962. Trudy*. Kiev, 1963, 50-57

TOPIC TAGS: graphite, carbide, graphite property, high temperature graphite, high temperature, high temperature property, carbide, niobium carbide, carbide mechanical property, carbide high temperature property, sintered carbide property, sintered carbide, sintered carbide testing, niobium carbide property, zirconium carbide property, zirconium carbide

ABSTRACT: Using testing devices for determining tensile or compressive strength which were modified for high temperatures, the authors studied the mechanical properties of various types of graphite and of niobium and zirconium carbides in the temperature range from normal up to 3200C. The principal characteristics of the modified testing devices were uniform heat distribution in the specimens at very high temperatures and the ability to measure very small deformations over a wide temperature range. The specimens were heated directly or indirectly by

Card 1/2

ACCESSION NR: AT4002328

electric current; when small specimens were tested for compressive strength, they were heated both directly and indirectly with a graphite thermoisolated heater. Stress was measured with a dynamometer, changes in load being recorded with time, while the deformation produced was recorded photographically. The data obtained were then plotted, yielding curves from which the tensile strength and modulus of elasticity could be calculated. The relationship between elasticity and temperature for graphite, and the effect of the addition of pyrolytic carbon, are shown in Fig. 1 of the Enclosure, while Fig. 2 shows the relationship between temperature and mechanical properties for niobium carbide. At normal temperatures, some specimens of niobium and zirconium carbides had a compressive strength of more than 30,000 kg/cm^2 and a modulus of elasticity in the range of 10 million kg/cm^2. At 2500C, the compressive strength and elasticity of these materials were equal to that of graphite. However, the mechanical properties of niobium carbide at high temperatures depend on its structure: specimens with high porosity showed much lower compressive strength and elasticity at high temperatures than specimens with lower porosity. The general set-up for determining compression strength is shown in Fig. 3 of the Enclosure. Orig. art. has: 3 illustrations and 2 graphs.

ASSOCIATION: none

Card 2/2

BELOTSERKOVSKIY, Grigoriy Bentsionovich; BABKIN, N.I., inzh., retsenzent; ZHDANOV, V.K., inzh., retsenzent; KALANTAROV, M.N., inzh., retsenzent; TELEZHKO, M.I., inzh., retsenzent; FAKTOROVICH, M.D., inzh., retsenzent; FEDOTOV, M.D., inzh., retsenzent; SAMOYLOV, G.V., inzh., red.; IVANOV-TSYGANOV, A.I., kand. tekhn. nauk, red.; BOGOMOLOVA, M.F., red. izd-va; ROZHIN, V.P., tekhn. red.

[Antennas]Antenny. Izd.2., perer. i dop. Moskva, Oborongiz, 1962. 491 p. (MIRA 16:2)
(Antennas (Electronics))

FEDOTOV, Mikhail Fedotovich; STOLPNER, Ye.B., red.; RUSAKOVA, L.Ya., red.; YASHCHURZHINSKAYA, A.B., tekhn.red.

[Supplying gas to enterprises from city gas systems] Gazosnabzhenie predpriiatii ot gorodskikh gazovykh setei. Leningrad, Gos.nauchno-tekhn.izd-vo neft.i gorno-toplivnoi lit-ry, Leningr.otd-nie, 1957. 238 p. (MIRA 11:1)

(Gas distribution)

TUL'CHINSKAYA, V.P. [Tul'chyns'ka, V.P.], prof.; FEDOTOV, M.I.; ISHCHENKO, N.I.; TURCHIN, I.P. [Turchyn, I.P.]

Methods of differentiating immunodiagnostic reactions in animals vaccinated against and in animals suffering from brucellosis. Na dopom.sil'.hosp.ta vyr. no.5:15-18 '58. (MIRA 13:3)

1. Kafedra mikrobiologii Odesskogo gosuniversiteta. 2. Chlen-korrespondent AN USSR (for Tul'chinskaya).
(Brucellosis in cattle) (Vaccination)

FEDOTOV, N.I. [Fedotov, M.I.]

Precipitation reaction in cattle vaccinated against brucellosis. Mikrobiol. zhur. 20. no.4:45-49'58. (MIRA 16:8)

1. Odesskiy gosudarstvennuy universitet.
(BRUCELLOSIS IN CATTLE) (VACCINATION)

FEDOTOV, M. P., Eng.

Electric Current Rectifiers

Some characteristics of a rectifying scheme with a valve having one pole grounded, Elek. sta. 24, No. 1, 1953.

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

FEDOTOV, M.P., inzhener.

Rationalizing preventive testing of the electrical equipment of a power station. Energetik 2 no.5:19-20 My '54. (MLRA 7:6)
(Electric power stations)

FEDOTOV, M.P., inzh.

Heat transfer in the condensation of steam in horizontal drums.
Izv. vys. uchsb. zav.; energ. 3 no.11:69-78 N '60. (MIRA 13:12)

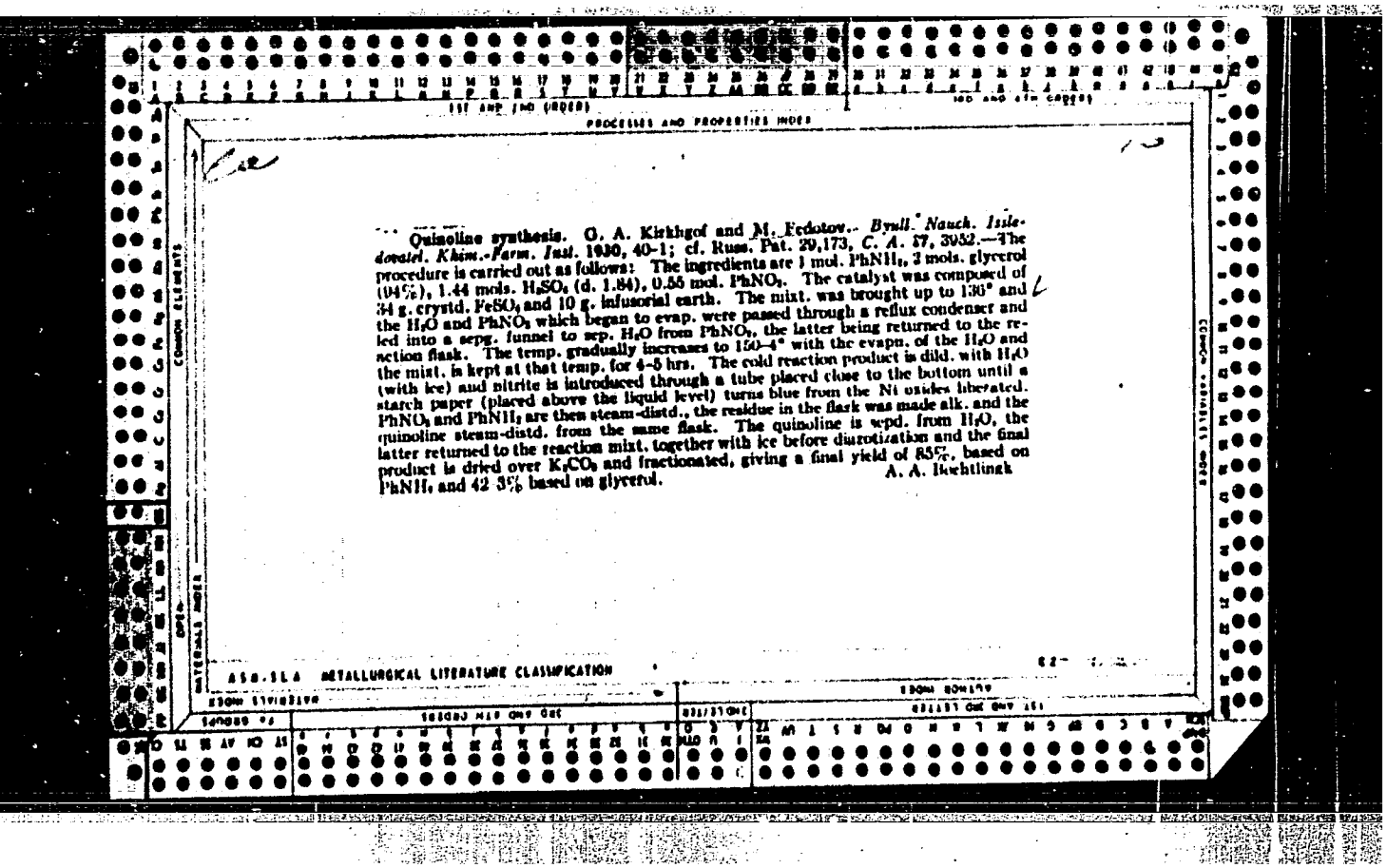
1. Ivanovskiy energeticheskiy institut im. V.I.Lenina. Predstavlena kafedroy teplofikatsii.
(Heat--Transmission) (Drying apparatus)

FEDOTOV, M.P., inzh.

Cleaning of the insulator chains of operating electric power transmission lines by means of a broken jet of water. Elek. sta. 33 no.6:66-69 Je '62. (MIRA 15:7)
(Electric lines--Overhead)

TROSHIN, P.V., kand.tekhn.nauk, dotsent; FEDOTOV, M.P., inzh.; SOKOLOV, Yu.P., inzh.; BORISOV, B.G., kand.tekhn.nauk; MALKOV, Yu.A., inzh.; SOROKIN, A.F., doktor tekhn.nauk, prof. [deceased]; ZUYEV, A.I., kand.tekhn.nauk; KOPTELOV, Yu.K., kand.tekhn.nauk; YERSHOV, Yu.G., inzh.; BROVKIN, L.A., kand.tekhn.nauk, dotsent; POTOSKUYEV, M.P., kand.tekhn.nauk, dotsent; PYATACHKOV, B.I., kand.tekhn.nauk, do[redacted]; ROMANOVA, T.M., kand.tekhn.nauk, dotsent

Abstracts of completed research works contracted for the national economy. Sbor. nauch.trud.IEI no.10 [redacted] '62.
(MIRA 16:9)



PROCESSES AND PROPERTIES INDEX

Quinoline synthesis. O. A. Kirkhgof and M. Fedotov. *Bysll. Nauch. Issledovatel. Khim.-Farm. Inst.* 1930, 40–1; cf. Russ. Pat. 29,173, *C. A.* 27, 3932.—The procedure is carried out as follows: The ingredients are 1 mol. $PhNH_2$, 3 mols. glycerol (94%), 1.44 mols. H_2SO_4 (d. 1.84), 0.55 mol. $PhNO_2$. The catalyst was composed of 34 g. crystd. $FeSO_4$ and 10 g. infusorial earth. The mixt. was brought up to 130° and the H_2O and $PhNO_2$ which began to evap. were passed through a reflux condenser and led into a sepg. funnel to sep. H_2O from $PhNO_2$, the latter being returned to the reaction flask. The temp. gradually increases to 150–4° with the evapn. of the H_2O and the mixt. is kept at that temp. for 4–5 hrs. The cold reaction product is dild. with H_2O (with ice) and nitrite is introduced through a tube placed close to the bottom until a starch paper (placed above the liquid level) turns blue from the Ni oxides liberated. $PhNO_2$ and $PhNH_2$ are then steam-distd., the residue in the flask was made alk. and the quinoline steam-distd. from the same flask. The quinoline is sepd. from H_2O, the latter returned to the reaction mixt. together with ice before diazotization and the final product is dried over K_2CO_3 and fractionated, giving a final yield of 85%, based on $PhNH_2$ and 42.5% based on glycerol.

A. A. Ikchtlingk

A50-51A METALLURGICAL LITERATURE CLASSIFICATION

USSR/Chemistry - Organic Mercury Mar 52
Compounds

"Reactions of Diphenyl Mercury With Metal Chlorides, in Which No Stable Metalloorganic Compounds Are Formed," G. A. Razuvayev, M. C. Fedotov, Chair of Org Chem, Gor'kiy State U

"Zhur Obshch Khim" Vol XXII, No 3, pp 484-489

Diphenyl mercury in ethyl cellosolve or dioxane soln, when heated with cobalt chloride or iron chloride, yields phenyl mercurichloride and benzene as a result of the reaction between the phenyl radical and the solvent. With the same solvents,

209T46

USSR/Chemistry - Organic Mercury Mar 52
Compounds (Contd)

upon heating with cupric chloride, it forms phenylmercurichloride, chlorobenzene, and cuprous chloride. On heating in morpholine soln with $FeCl_3$, $CuCl_2$, or $CoCl_2$, C_6H_6 is formed and metallic Hg separates. The reaction proceeds on account of reducing processes which take place upon heating of complex metallic chloride salts with morpholine.

209T46

S.

FEDOTOV, M. V.

5

CZECH

Reactions of diphenylmercury with chlorides of metals which do not form stable organometallic compounds. II. M. S. Fedotov (State Univ., Gorki). *Sbornik Statei Obshchei Khim.* 2, 884-8(1953); cf. C.A. 47, 2723g.—Heating Ph_2Hg with dry $CoCl_2$, $FeCl_3$ in pyridine, $MnCl_2$ in $EtOCH_2CH_2OH$, or $NiCl_2$ in $(CH_2OH)_2$, yields PhHgCl and C_6H_6. With $CuCl_2$ in pyridine it yields PhHgCl and PhCl. $FeCl_3$, $CuCl_2$, and $NiCl_2$ can completely dearylate Ph_2Hg if taken in proper proportions. $FeCl_3$ and Ph_2Hg in $EtO(CH_2)_2OH$ give C_6H_6 and $HgCl_2$, while $CuCl_2$ yields PhCl and $HgCl_2$, and $NiCl_2$ yields C_6H_6 and $HgCl_2$, the latter reaction run in $(CH_2OH)_2$ yields Hg because of reduction of the $HgCl_2$.

G. M. Kosolapoff

FEDOTOV, M. S.

40

USSR

Reactions of tetraphenyllead and tetraphenyltin with chlorides of metals which fail to form stable organometallic compounds. G. A. Razuvaev, M. S. Fedotov, T. N. Zaitsenko, and N. A. Kuz'minykh (State Univ., Gorkii). *Zhurnal Obshchei Khimii*, 2, 1514–19(1953).—Refluxing 6 g. Ph_4Pb and 2.6 g. $CoCl_2$ in 20 g. $EtOCH_2CH_2OH$ 5 hrs. gave 62.1% C_6H_6 and 67.25% Ph_2PbCl_2. Similarly 5 g. Ph_4Pb and 3.18 g. $FeCl_3$ after 1 hr. gave 69.30% C_6H_6 and 73.45% Ph_2PbCl_2; in 7 hrs. these were 84.88% and 80.75%, resp. Ph_4Pb (5 g.) and 2.6 g. $NiCl_2$ similarly in 2.5 hrs. gave 61.1% C_6H_6 and 1.8 g. $PbCl_2$. In 12 hrs. Ph_4Pb and $MnCl_2$ similarly gave 62.85% C_6H_6 and 51.1% Ph_2PbCl_2, while Ph_4Pb and $CuCl_2$ in 4 hrs. gave 83.36% PhCl and 97% Ph_2PbCl_2. Ph_2PbCl_2 and $FeCl_3$ in 2 hrs. similarly gave C_6H_6 and 91% $PbCl_2$. Ph_4Sn (2.23 g.) and 2.7 g. $CoCl_2$ similarly gave in 7 hrs. a trace of C_6H_6; with $FeCl_3$ in 10 min. it formed 91.7% C_6H_6 and $SnCl_2$; $NiCl_2$ gave the same result, but $CuCl_2$ gave 91.3% PhCl, and $MnCl_2$ failed to react.

G. M. Kosolapoff

(3)

USSR

Reactions of dibenzylmercury with chlorides of metals which fail to form stable [illegible] compounds. [illegible] Razuvaev and M. S. Fedotov (State [illegible]). *Zhur. Obshchei Khim.* 22, 1617 [illegible] 47, 3723g.—Refluxing 5 g. $(PhCH_2)_2Hg$ (I) and 4 [illegible] $FeCl_3$ in $EtOCH_2CH_2OH$ (Ia) 4 hrs. gave [illegible] Hg and [illegible] $EtOCH_2CH_2OCH_2Ph$ (II) [illegible] $CuCl_2$ similarly gave in 15 min. [illegible] II and [illegible] and Cu_2Cl_2. I and $CuCl_2$ in 2 hrs. [illegible] and 60.7% Hg. I and $FeCl_3$ in dioxane [illegible] reflux $FeCl_2$ and 5.[illegible]% $PhCH_2HgCl$ [illegible] II. $HgCl_2$. I and $CuCl_2$ in dioxane [illegible] $[illegible]HCl$, Cu_2Cl_2, and 92.4% $HgCl_2$ [illegible] $CuCl_2$ [illegible] gave in 20 min. 40.7% II and 32.4% $HgCl_2$. [illegible] $CuCl_2$ in Ia with $PhCH_2HgCl$ in 1 hr. gave 83.7% $HgCl_2$ and 78.1% [illegible] ether. I heated in Ia alone 4 hrs. gave [illegible]% Hg and 73% dibenzyl. Heating $PhCH_2Cl$ and $CuCl_2$ [illegible] 1 hr. gave Cu_2Cl_2 and some II, [illegible] a similar result. Thus reactions of I [illegible] [illegible] solvents.

5.3400

SOV/81-59-5-15319

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 5, p 188 (USSR)

AUTHOR: Fedotov, M.S.

TITLE: On the Catalytic Formation of Simple Benzyl Ethers

PERIODICAL: Uch. zap. Gor'kovsk. un-ta, 1958, Nr 32, pp 185 - 186

ABSTRACT: The catalytic formation is pointed out of $C_6H_5CH_2OCH_2CH_2OC_2H_5$ (I) upon heating $C_6H_5CH_2Cl$ (II) in $HOCH_2CH_2OC_2H_5$ (III) in the presence of metal chlorides (MC). During reactions of metal-organic compounds (MOC) with anhydrous MC in a III medium, amongst other products, I is formed; in a medium of dioxane (IV) the reaction product is II; the formation of I in a III medium depends on the catalytic action of MC. The possibility is shown of this catalytic reaction extending to the formation of other mixed benzyl ethers. 117 mmole of II, 10 g of III and 13 mmole of anhydrous $CuCl_2$ are boiled for 1 hour, the filtrate is distilled with steam, the distillate is extracted with ether, 9.1 g of I is separated, b.p. 230 - 245°C. In the same manner the reaction is carried out between III and $(C_6H_5CH_2)_2$ with Hg

Card 1/2

SOV/81-59-5-15319

On the Catalytic Formation of Simple Benzyl Ethers

(V) of $C_6H_5CH_2HgCl$ (VI). The initial III or IV are cited, its quantity in g, the initial V or VI, its quantity in mmole, MC, its quantity in mmole, the boiling time in hours, the substance obtained and its yield in %: III, 20, V, 9.2, $CoCl_2$, 37, 2, I, 45; III, 20, V, 13, $FeCl_3$, 26, 4, I, 52.5; III, 20, V, 7.8, $CuCl_2$, 31, 0.25, I. 85; III, 15, VI, 15, $FeCl_3$, 15, 0.33, I, 40.7; III, 20, VI, 15, $CuCl_2$, 30, 1, I, 78.1; IV, 25, V, 13, $FeCl_3$, 26, 2, II, 51; IV, 20, V, 13, $CuCl_2$, 52, 1, II, 71.4.

V. Skorodumov

Card 2/2

FEDOTOV, M. K. (Moskva)

Role of the extractives in the oxidation of coal. Izv.AN SSSR.Otd. tekh.nauk.Met.i topl. no.4:175-178 Jl-Ag '60. (MIRA 13:9)
(Coal tar products)

FEDOTOV, N.; MANYUKOV, G., inzh.

Large brick-faced blocks. Stroitel' no.4:19 Ap '58.
(MIRA 11:5)

1.Nachal'nik kombinata Karagandashakhtostroy (for Fedotov).
(Concrete blocks)

FEDOTENKO, N.

The ranks of the society are growing in numbers and strength. NTO 3 no.3:24-25 Mr '61. (MIRA 14:3)

1. Zamestitel' predsedatelya TSentral'nogo pravleniya Nauchno-tekhnicheskogo obshchestva mashinostroitel'noy promyshlennosti.
(Technical societies)

1. FEDOTOV, N. A., Eng.

2. USSR (600)

4. Shaft Sinking

7. Sinking vertical shafts according to continuous work schedule, Mekh. trud. rab., 6, No. 10, 1952.

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

1. FEDOTOV, N.; DUBININ, N.

2. USSR (600)

4. Shaft Sinking

7. Continuous work schedule for sinking vertical shafts. Ugol'. 27, No. 10, 1952.

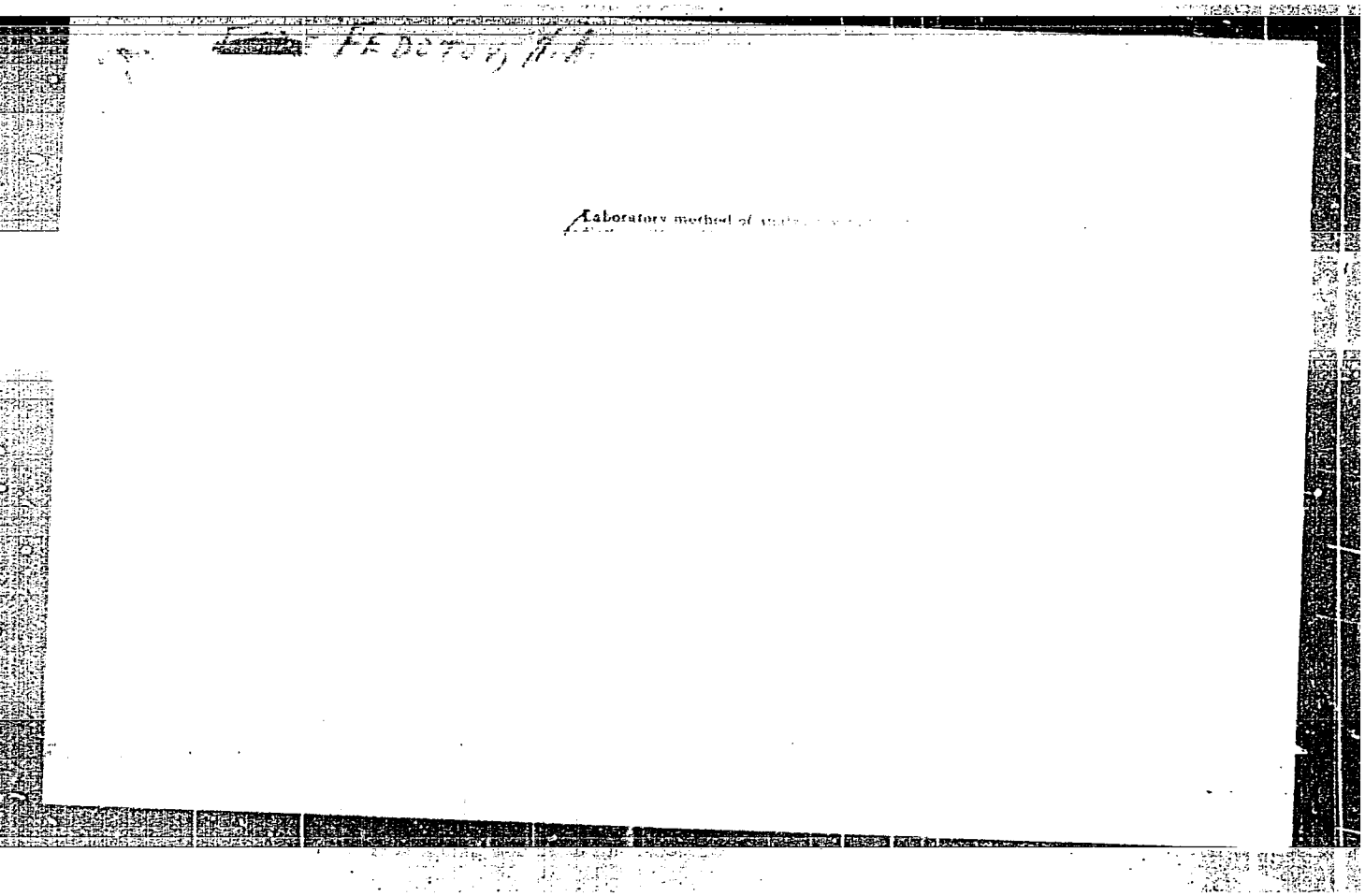
9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

MANYUKOV, G., inzh.; SAGIMYAN, V., inzh.; FEDOTOV, N., inzh.

Making brick-concrete wall blocks and panels. Stroitel' no. 12:19-23 D '60. (MIRA 13:12)
(Kazakhstan--Building blocks)

Determination of the capacity of a mercury cathode by means of potential measurements after switching-off the polarization current. N. A. Izgarev (Karpov Phys. Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 25, 3 (1951). The technique used by Hickling and Salt (*C.A.* 35, 6510[9]; 37, 1330[9]) is modified and improved. The potential of a Hg cathode is measured immediately after the current is cut off (2×10^{-5} sec.) by means of an app. which synchronizes the operations and which consists of 3 parts, the circuit breaker and time-potential recorder, a tube amplifier, and an oscilloscope with photographic recording. The time and potential scales on the photographs are detd. by recording, resp., a 10-kc. a.c. and the discharge of a calibrated condenser. Full description of circuits is given. The H overvoltage η on Hg is measured in a *N* H_2SO_4 soln. at a c.d. between 5×10^{-6} and 6×10^{-4} amp./sq. cm. The values of η are 0.918, 0.947, 0.980, 1.012, 1.044, 1.079, 1.111, 1.150, 1.179 v., resp., for $-\log i = 4.30, 4.09, 3.79, 3.40, 3.09, 2.79, 2.52, 2.22, 2.00$. The oscillograms show that the potential decreases linearly with time for i_0 (c.d. at time $t = 0$) $< 4.10^{-4}$ amp./sq. cm. Thus: $C\Delta\eta = id$ (1) where C is the electrode capacity. For $i_0 > 4.10^{-4}$, C must be calcd. by putting Tafel's relation $\eta = b \log i$ into (1) and integrating: $\eta_t = \eta_0 - b \log [1 + (id.2.3/Cb)]$. (2) Values of C calcd. with (2) and $b = 0.11$ are, resp., 19.0, 19.3, 19.5, 18.8, 19.4, 18.1, 18.3 microfarads/sq. cm. for $i = 5.10^{-6}$, 1.10^{-4}, 4.10^{-4}, 8.10^{-4}, $1.6.10^{-3}$, 3.10^{-3}, 6.10^{-3} and for ϵ (cathode potential relative to the H electrode in the same soln.) = 1.618, 1.647, 1.712, 1.744, 1.779, 1.811, 1.850 v. The value of C agrees with the data of the other workers (Proskurnin and Frumkin, *C.A.* 29, 3213[9]; Borisova and Proskurnin, *C.A.* 30, 7461[9]) and shows that the self-discharge of the Hg cathode corresponds to ionic discharge in the double layer and that no chemisorbed active adsorbed H atoms are present at the surface.

Michel Boudart



Laboratory method of

AUTHOR: Fedotov, N.A. 32-24-4-57/67

TITLE: Resistant Glass Electrodes for pH Measurements at Temperatures of up to 100° (Prochnyy steklyannyy elektrod dlya izmereniya pH pri temperaturakh do 100°)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 4, pp. 498-499 (USSR)

ABSTRACT: The glass electrodes described are manufactured from lithium-containing glass with an addition of lanthanum and cesium in accordance with a description previously given (Ref 1). The technique of manufacture is described and two varieties of the shape of the electrodes are mentioned. Chlorination of the silver electrode is carried out by anode polarization in 0.1n hydrochloric acid, whereas vaporization of the electrode liquid is prevented by the melting-on of "platinite" as a hermetically tight seal. The characteristic of the glass electrode is shown by a diagram for temperatures of 25, 60 and 95° C; an analogy between the glass electrode and the hydrogen electrode for the range of from pH 0.5 to 12.5 is observed. The electrodes are resistant against a longer heating in acid or alkaline solutions without changing their property. "Zero" of the electrodes is given as being pH 1.85±0.05

Card 1/2

Resistant Glass Electrodes for pH Measurements at Temperatures of up to 100°

32-24-4-57/67

and at a temperature of 25°, whilst resistance is relatively low. By industrial tests carried out at 90-95° and pressures of up to 8 atm it was found that glass electrodes may be used for the control of technological processes at increased temperature and pressure; besides, the resistivity of the electrodes in the case of heating of longer duration at 120 - 130° C was proved by laboratory tests. The dimensions of the electrodes as well as contact-guides can, under certain conditions, be changed. There are 2 figures, and 1 reference, 0 of which is Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya. Karpova (Scientific Research Institute for Physical Chemistry imeni L.Ya.Karpov)

1. Glass electrodes--Production 2. Glass electrodes--Properties 3. Glass electrodes--Temperature factors 4. Hydrogen ion concentration--Corrosive effects

Card 2/2

AUTHOR: Fedotov, N. A. SOV/76-32-9-3/46

TITLE: The Electrode Properties of Lithium Glass (Elektrodnyye svoystva litiyevogo stekla)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 1951 - 1957 (USSR)

ABSTRACT: Sodium glass electrodes, such as ES-1 and ES-2, have too low an incidence of applicability. The author investigated lithium glass Nr.. 490,491, and 494 (composition in table 1) at temperatures between 17° and 95° and in the pH range 1 to 12,5. The glasses were produced by the collaborators of the Glass Institute G.S.Bogdanova and Ye.Orlova. The experimental arrangement is shown in figure 1; the electronic potentiometer EPDV-53 was used in measurements. The solutions used were H_2SO_4, HCl, citrate-phosphate buffer solution, alkali-borate, and alkali solutions. The pH level was controlled using a hydrogen electrode. Table 2 summarizes the experimental results. The potential assymmetry and the resistance of the electrodes were also measured (Figs 3,4,5, and 6). These properties do not change if the lanthanum-cesium ratio

Card 1/2

in the glass is raised from 1 to 1,67. The increase in the curve characteristic of the electrodes becomes less at higher temperatures and at pH values above 9. This results from a change in the true pH value of the solutions. There are 6 figures, 2 tables, and 2 references, 1 of which is Soviet.

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

SUBMITTED: February 2, 1957

05761

28(4)
AUTHOR: Fedotov, N. A. SOV/32-25-10-50/63

TITLE: A Glass Electrode With a Copper Auxiliary Electrode

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 10, pp 1267-1268 (USSR)

ABSTRACT: The possibilities for the application of copper for the production of internal electrodes are investigated. The principal demand made on an internal electrode is that the potential jump at the boundary glass(metal)-solution must remain constant. This is the case if the metal is not dissolved at all or very slowly, i.e. the concentration of the ions which determine the potential, remains constant. Therefore, the glass electrode was filled with a 0.5n copper sulphate solution, which was acidulated with sulphuric acid to a 0.2n concentration, because, in the absence of an oxidation medium, copper dissolves very slowly in sulphuric acid. Oxygen was carefully removed from the glass electrode and the latter was hermetically closed. The copper electrodes were made by post-treatment from an insulated copper wire (diameter 0.5 mm), such as is used for transformer windings. The glass electrodes produced (Fig) are tested for some time by

Card 1/2

means of a potentiometer of the type LP-5 and after having been kept in 0.1n hydrochloric acid. After storage at room temperature for 9 months, no variation of zero (Table) was found to have occurred. Slight variations occur in the case of heating, but this is characteristic of the lithium glass from which the glass electrodes were made (Table). There are 1 figure and 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

28(4)
AUTHOR: Fedotov, N. A.

-05762
SOV/32-25-10-51/63

TITLE: Laboratory Unit for Measuring the pH of Solutions With a Glass Electrode

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 10, p 1269 (USSR)

ABSTRACT: The laboratory pH-meters of the type LP-5 with glass electrode produced by the home industry use up much of the solution to be investigated, because the electrode must be washed out several times with the solution. A pH-meter (Fig) with a glass electrode was constructed, for the application of which a sample quantity of 0.05-0.10 ml suffices. The glass electrode is made from lithium glass (Ref 1). pH-measurement may be carried out by means of a potentiometer of the type LP-5; it is, however, necessary to pay attention to reading off the values, because there is a difference between the "zero" of the given electrodes and of those which are used in the pH-meter Moskip. From the description of the pH-meter it follows that the glass electrode and the calomel standard electrode are fastened to a lamella of organic glass, and that a narrow capillary (1.5-2.0 mm diameter) extends from the lower end of the calomel electrode to a point 2 mm below the neck of

Card 1/2

Laboratory Unit for Measuring the pH of Solutions With a Glass Electrode

the glass electrode, the capillary tube being closed by means of a filter paper tampoon. The capillary is filled with a saturated solution and crystals of potassium chloride. For the pH-measurement of small volumes of liquids a glass cup, made from a glass tube having a diameter that is 0.1-0.2 mm greater than that of the glass electrode sphere, is used. If the pH-meter is not in use, the electrodes are stored in a metal cup which is filled with a saturated potassium chloride solution, and which, in its interior, is lined with organic glass; the metal cup is fixed onto the pH-meter. There are 1 figure and 1 Soviet reference.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

5.5400,21.4200,24.6820

78332
SOV/89-8-3-17/32

AUTHOR: Fedotov, N. A.

TITLE: Influence of γ-Radiation on Electrode Properties of Lithium Glass. Letter to the Editor

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 3, pp 262-264 (USSR)

ABSTRACT: The author investigated the influence of γ-rays on electrode properties of glass used for glass electrode production. A Nr 23 glass tube 12 mm in diam held a glass sphere made of lithium electrode glass of following constitution (in molar percent): Li_2O - 27; Cs_2O - 3; La_2O_3 - 3; SiO_2 - 67. The author proceeded to test three most sensitive characteristics of the electrodes, the sensitivity gradient, the potential of asymmetry and the resistance. The inside of the electrodes were filled with a 0.1 N solution of hydrochloric acid. The measurements of the glass electrodes in standard buffer solutions were done with respect to saturated calomel electrode held at the same temperature.

Card 1/4

Influence of γ-Radiation on Electrode Properties of Lithium Glass. Letter to the Editor

78352
SOV/89-8-3-17/32

The diagram of the apparatus is shown on Fig. A.

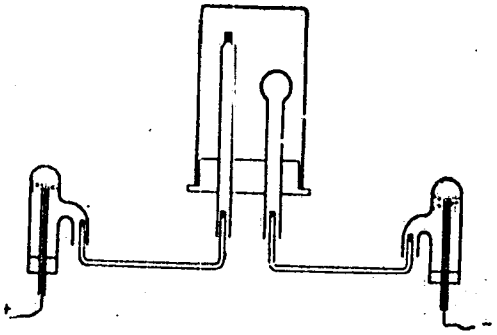


Fig. A. Diagram of the apparatus for measurements of potential of glass electrodes.

The potential of asymmetry was measured in the interval from 1 to 10 pH with a $\pm$ 2 mv accuracy. Wall resistance was measured by means of the current between two silver electrodes inside the solution on both sides of the glass electrode sphere. Outside emf

Card 2/4

Influence of -Radiation on Electrode Properties of Lithium Glass. Letter to the Editor

78332
SOV/89-8-3-17/32

used was 90 v. Resistance measurements were of ± 1% accuracy. All cylindrical parts of the electrodes were covered by vaseline to make them nonwetting. The electrodes were exposed to -radiations from a Co^{60} source equivalent to 20.000 gm equiv. Ra. Electrode spheres were located 7 cm from the center of the source, and the exposure lasted 48 hr. The integral irradiation dose was 25 Mr. After exposure the electrodes became dark brown. The sensitivity gradient was measured to be 58.0 ± 0.3 mv/pH at 21 C and remained unchanged during the -exposure, after correcting experimental values for a slight temperature variation. The resistance of lithium glass remained also constant within the experimental error before and after exposure. The change of the potential of asymmetry of the electrodes was on the average 3 mv. The author concludes that this shows that the lithium glass electrodes can be used for pH measurements of solutions containing a high percentage of -active isotopes. There are 1

Card 3/4