

ALEKSANDROV, V.P.

"Selecting Optimum Parameters of Impulsed for Electrospark Treating of Nickel-Base Refractory Alloys."

report presented at the 13th Scientific Technical Conference of the Kuybyshev Aviation Institute, March 1959.

34052

S/123/62/000/003/006/018  
A004/A101

1.1110

AUTHORS: Aleksandrov, V. P., Zolotykh, B. N.

TITLE: Selecting optimum conditions for the electrospark machining of heat-resistant alloys on a nickel base

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 3, 1962, 34, abstract 3B174 ("Tr. Tsentr. n.-i. labor. elektr. obrabotki materialov. AN SSSR", 1960, no. 2, 196-204)

TEXT: The difficulties arising with the mechanical machining of heat-resistant alloys of high toughness together with sufficient hardness and tendency to workhardening make it necessary to use electrospark machining. To determine the conditions of a flawless electrospark machining of these alloys, the authors measured the metal removal and surface finish, and analyzed the structural changes of the surface layer subjected to the effects of pulses of various energy (0.5 - 4.5 joule) and duration (130 - 1,050 microseconds). It was found that the dependence of the erosion magnitude on the pulse duration has a maximum at the constant energy. If the energy is increased, the maximum shifts in the direction of an increase in the pulse duration: at an energy of 0.5 joule the

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Selecting optimum conditions ...

maximum corresponds to a duration of 250 microseconds; if the energy amounts to 4.5 joule, the duration is 600 microseconds. The surface roughness increases with the rise in energy and pulse duration. Metallographic investigations of the machined surface showed that the upper layer had the dendritic structure characteristic for metal obtained from the molten state. Below the fused layer, a zone of thermal effect is located which shows structural changes at the grain boundaries and microcracks. The thickness of the zone of the fused layer and that of structural changes depends, to a great extent, on the pulse duration. Microcracks and structural changes at the grain boundaries can be observed if the pulse duration exceeds 300 microseconds, while they disappear with pulses of less than 200 microseconds. The data presented pertain to the  $\text{ЭИ 4375}$  (EI4375) alloy, while the results for other alloys differ only slightly. Thus the conclusion on the use of pulses having a duration of less than 200 microseconds can be considered as a general recommendation for the flawless electro-spark machining of heat-resistant alloys on a nickel base. ✓

S. Kruglova

[Abstracter's note: Complete translation]

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S/147/61/000/002/012/015  
E081/E135

AUTHORS: Aleksandrov, V.P., Loginov, V.Ye., and Nikitin, A.N.

TITLE: Investigation of the residual stresses in the surface layer on machining heat resistant and titanium alloys

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, 1961, No.2, pp. 125-135

TEXT: The paper is a continuation of previous work (Ref.3: A.V. Podzay, V.Ye. Loginov, N.N. Novikov, Stanki i instrument, No.6, 1958. and Ref.5: V.P. Aleksandrov, B.N. Zolotykh, Izvestiya AN SSSR, OTN No.6, 1958). Experiments are described on specimens of the nickel based alloy NI-437 (EI-437) and the titanium alloy BT3-1 (VT2-1) to determine the stresses in the surface layer resulting from working the material. Electric strain gauges were used to measure the stresses, and the alloy specimens were subjected to different amounts of grinding using an abrasive wheel with and without cooling by flow of emulsion or carbon dioxide. Another set of specimens was subjected to electro-erosion grinding using three different types of pulse generators with pulse durations of 1.5, 100 and 1000 uscc. The following conclusions are drawn from the

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experimental results. Plane grinding of both alloys by an abrasive wheel and by electro-erosion produces residual tensile stresses. The nature of the distribution of these stresses shows that their formation is connected basically with the high temperature gradient. The results of the tests of grinding by an abrasive wheel can be summarised thus: 1) with increasing depth of cutting, the magnitude of the residual stresses and the depth of their penetration both increase; 2) with increasing "coefficient of lapping"  $K_g$ , the magnitude of the surface stresses rapidly diminishes and the maximum stress occurs under the surface layer; 3) the introduction of flow cooling, especially by carbon dioxide (in the grinding of the alloy VTZ-1) appreciably influences the lowering of temperature under the surface layer, resulting in a twofold increase in the depth of penetration of the maximum residual stresses. The results of the electro-erosion grinding tests led to the following conclusions: 1) increase in the duration of the electrical pulse leads to a rapid growth in the magnitude of the axial residual stresses, and also in the depth of their penetration; 2) regardless of the state of the spark gap and the frequency of the pulses (tens and even hundreds of megacycles/sec), RC type

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E081/E135

pulse generators or other generators producing short pulses  
(1-5  $\mu$ secs) are recommended for feeding the electro-erosion  
equipment in the finishing operations.  
There are 8 figures, 3 tables and 5 Soviet references.

ASSOCIATION: Kafedra proizvodstva aviadvigatelye,  
Kuybyshevskiy i Moskovskiy aviatsionnyye instituty  
(Department of Aircraft Engine Production,  
Kuybyshev and Moscow Aviation Institutes)

SUBMITTED: August 28, 1960

X

Card 343

L 19195-63 EWP(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-1 JD

ACCESSION NR: AR3004193

S/0276/63/000/005/B056/B057

62

SOURCE: RZh. Tekhnologiya mashinostroyehiya, Abs. 5B243

AUTHOR: Aleksandrov, V. P.

TITLE: Residual stress, duration and fatigue strength after electrical erosion machining heat-resistant materials

CITED SOURCE: Sb. Obrabatyvayemost' zharoprochn. i titanovykh splavov. Kuybyshchev, 1962, 398-409

TOPIC TAGS: residual stress, duration, fatigue strength, electrical erosion machining, heat-resistant material, compression stress, brief impulse, EI437, EI647

TRANSLATION: Among existing technological processes of manufacturing machine parts made of heat resistant materials, the machining method by means of electrical erosion has a prominent place and in a number of cases is the only one possible. Methods and results of investigations are outlined of electrical erosion machining of extensively used nickel base heat resistant alloys of EI437 and EI617 type. The following conclusions are drawn: 1) In the surface layer

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residual tension stresses are created after electrical erosion machining. These stresses become compression stresses at a certain depth of the base of the alloys. The magnitude of stresses rises when the duration of impulse increases. For very long lasting impulses ( $t_u > 250$  microsec) values of tension stresses exceed the yield point and they approach strength limits of investigated materials.

2) Electrical erosion machining by impulses lasting less than 250 microsec and of energies up to 0.5 jcule do not lower the duration strength and they only slightly lower the fatigue strength of heat resistance alloys mentioned. At a work with impulses of greater duration ( $t_u \sim 100$  microsec), a decrease in duration strength amounts to 25 to 30% and that in the fatigue strength -- 40 to 45%.

3) Application of sources of current forming impulses of smaller than 250 microsec duration to electrical erosion machining of heat resistant alloys EI437 and EI617 allows reducing final machining allowance by 6 to 7 times. Six figures, 9 references. I. Zorokhovich.

DATE ACQ: 21Jun63

SUB CODE: MD, IE

ENCL: 00

Card 2/2



L 1116-64

EWP(k)/EWP(q)/EWT(m)/EWP(b)/BDS

AFFTC/ASD

PC-4/Pad

JD/HW

ACCESSION NR: AR3005485

9/0124/63/000/006/V077/V077

SOURCE: RZh. mekhanika, Abs. 6 V617

23

AUTHOR: Aleksandrov, V. P.

TITLE: Residual strains, long-term and fatigue strength following electroerosive treatment of heat-resistant materials

CITED SOURCE: Sb. Obrabaty\*vayemost' zharoprochn. i titanovy\*kh splavov. Kuyby\*shev, 1962, 398-409

TOPIC TAGS: material strength, heat-resistant material, electroerosive treatment

TRANSLATION: The author investigated the properties of EI437 and EI617 heat-resistant nickel-base alloys following electroerosive treatment. The determination of residual strains was carried out by the method of N. N. Davidenkov. It was found that in the surface layer there arise residual distending strains which become compressive strains at some depth (in the alloy base). The strain level increases with increasing duration of pulse t. With t > 250 microsec the values of the distending strains exceed the yield limit and approach the limit of strength

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ACCESSION NR: AR3005485

of the material. Electroerosive treatment with pulses of less than 250 microsec duration and energies up to 0.5 joule does not reduce the long-term strength of alloys. With treatment with pulses of greater duration ( $t > 1,000$  microsec) the reduction of the long-term strength is 25-30%, and that of fatigue strength -- 40-45%. The use for electroerosive treatment of heat-resistant materials of pulses lasting less than 250 microsec makes possible a 6-7 fold reduction of the margin for final treatment. L. I. Mirkin.

DATE ACQ: 01 Jul 63

SUB CODE: PH, ML

ENCL: 00

Card 2/2

ACCESSION NR: AT4012870

S/3060/63/000/000/0113/0118

AUTHOR: Aleksandrov, V. P.

TITLE: Investigation of residual stresses, long-time creep strength and fatigue strength of heat-resistant materials after electric spark machining

SOURCE: AN SSSR. Tsentr. n.-i. lab. elektr. obrabotki metallov. Elektroiskrovaya obrabotka metallov. Moscow, 1963, 113-118

TOPIC TAGS: residual stress, creep strength, fatigue strength, heat resistant alloy, alloy residual stress, alloy creep strength, alloy fatigue strength, electric spark machining, nickel alloy, E1617 alloy

ABSTRACT: It is known that the technological characteristics of parts manufactured by electric spark machining, including those of heat-resistant alloys, are determined by the characteristics of the pulses as well as by the pulse repetition frequency. A brief summary is given of results of investigations of the machinability of nickel-based heat-resistant alloys by means of pulses of different characteristics. Data derived from local spectral analysis has revealed that the melted surface layer of such alloys after machining has a chemical composition different from that of the basic metal and has different physico-chemical properties. For example, the melted surface layer has higher microhardness than the

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base material of the alloys. It was also found that the depth of the surface layer, fused as a result of the machining, increases considerably as the pulse duration is lengthened. The author discusses the causes for the formation of a defective surface layer when machining these alloys by means of long-duration pulses, with a collateral inquiry into the effect of pulse properties on the strength characteristics of such materials. He states that surface layer stress and the depth of its penetration is a function of the duration of the electrical pulses. Results confirming this were obtained in the machining of a E1617 alloy. An explanation is offered of the development, in the layer, of residual tension stress based on the supposition that a part of the fused metal, which remains unremoved from the machining zone during the transition process from the liquid to the solid state, is reduced in volume. The volume reduction is impaired by the surrounding segments of the alloy which are at a lower temperature. The result is the development of locked-in stresses in the surface layer once it has hardened. The author alleges that test results point to a substantial influence of pulse duration on the long-time creep and fatigue strength (test alloy: E1437B). This effect was found not to be valid for all alloys tested, although analogous qualitative results were obtained for a complex alloy E1617. The use of long-duration pulses (more than 250 microseconds) leads to the need for an increased allowance for final machining. Orig. art. has: 4 figures and 1 table.

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L 44558-65 EPP(a)-2/EPR/EWP(m)/EWP(L)/EWP(z)/EWG(m)/T/EWP(b)/EWA(a)/  
 AM5012732 EWP(w)/EWP(t) BOOK EXPLOITATION Pf-4/ UI/

41  
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Ps-4/Pu-4 IJP(c) JD/JG  
 Aleksandrov, Vladimir Pavlovich

A study of technological characteristics of electrical discharge machining of heat-resistant materials (Issledovaniye tekhnologicheskikh kharakteristik elektroerozionnoy obrabotki zharoprochnykh materialov) Moscow, Izd-vo "Nauka", 1964. 121 p. illus., biblic. 1,800 copies printed.

TOPIC TAGS: high temperature metal, electric discharge, metal machining, metal surface

PURPOSE AND COVERAGE: This book presents results of the investigation of electrical discharge machinability of heat-resistant alloys used in modern machine construction. The author give concrete recommendations on the selection of conditions of electrical discharge machining, providing for high properties of manufactured parts. The book is intended for technologists engaged in machining of heat-resistant materials and, undoubtedly, is of great interest for a wide circle of people engaged in electrical discharge machining, since great consideration has been given in the book to the surface quality and surface finish, machined by electrical discharge method--a matter almost never discussed in specialized literature.

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SUB CODE: MM

SUBMITTED: 14Nov64

NO REF SOV: 066

OTHER: 006

*1553*  
Card 2/2

IDEL'CHIK, I. Ye., kand. tekhn. nauk; ALEKSANDROV, V.P., inzh.

Designing collectors supplying gas flow to electric filters of  
high power boilers. Teploenergetika 11 no.12:61-65 D '64  
(MIRA 18:2)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut po  
promyshlennoy i sanitarnoy ochistke gazov.

CHINAKAL, N.A., otv. red.; ALEKSANDROV, V.P., kand. ekon. nauk, red.; OZHEGOV, Yu.P., kand. filos. nauk, red.; SHCHERBAKOV, A.I., red.

[Some problems concerning the strengthening of the role of science in the building of communism; materials for a scientific and practical conference] O nekotorykh voprosakh usilenia roli nauki v stroitel'stve kommunizma; materialy k nauchno-prakticheskoi konferentsii. Novosibirsk, 1965. (MIRA 18:5)  
226 p.

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut gornogo dela. 2. Institut gornogo dela Sibirskogo otdeleniya AN SSSR, Novosibirsk (for Shcherbakov, Chinakal). 3. Kafedra filosofii Sibirskogo otdeleniya AN SSSR, g. Novosibirsk (for Ozhegov).



L 04157-67 EWT(d)/EWT(1)/EWT(m)/EWP(c)/EWP(v)/I/EWP(t)/ETI/EWP(k)/EWP(1)

ACC NR: AR6016525 IJP(c) JD SOURCE CODE: UR/0276/65/000/012/B033/B033

AUTHOR: Aleksandrov, V. P.; Golovachev, V. G.; Okunev, A. I.; Petrov, B. I.;  
Filimoshin, V. G. B  
B

TITLE: Characteristics of machining a surface by the electrochemical method D

SOURCE: Ref. zh. Tekhnologiya mashinostroyeniya, Abs. 12B240

REF SOURCE: Tr. Kuybyshevsk. aviats. in-t, vyp. 20, ch. 1, 1965, 169-173

TOPIC TAGS: electroerosion machining, error, electrochemistry

ABSTRACT: A method is proposed for calculating the parameters during machining of a surface by a flat electrode tool moving at a constant rate in the direction of the surface being finished. Formulas are given for calculating the minimum necessary allowance for leveling the surface from the initial error  $\Delta_0$  to the final error  $\Delta_k$  in those cases where the rate of motion of the electrode tool is equal to, greater than and less than the rate of electrochemical dissolution. 5 illustrations. L. Tikhonova [Translation of abstract]

SUB CODE: 13

Card 1/1 *hh*

UDC: 621.9.047

L 10711-67 FWP(e)/EWT(m) LJP(c) DS/WJ/WH  
ACC NR: ARG020047 SOURCE CODE: UR/0276/66/000/001/B043/B043 13

AUTHOR: Aleksandrov, V. P.

TITLE: Effect which the material and structure of the electrode tool have on the erosion of electrodes

SOURCE: Ref. zh. Tekhnologiya mashinostroyeniya, Abs. 1B292

REF SOURCE: Tr. Kuybyshevsk. aviats. in-t, vyp. 20, ch. 1, 1965, 17-24

TOPIC TAGS: carbon electrode, electrode property, electrode design, electroerosion

ABSTRACT: It is experimentally established that EEG carbon material has the best erosion resistance. MG-4/copper-graphite composition is inferior to cast iron with respect to relative volumetric wear although it is considerably superior to LS-59 brass. The comparatively high erosion resistance of MG-4 copper-graphite composition may be explained by the high thermal and electrical conductivity at a high melting point (due to the presence of graphite). The electroerosion characteristics of aluminum and its alloys are lower than cast iron, i. e. when they are used as the cathode material the erosion of the anode is lower with a rather considerable relative volumetric wear of the cathode reaching 30-40%. In addition, the stability of the process when aluminum and its alloys are used as electrode tool materials is considerably poorer than with LS-59 brass. Thin edges on the tool are worn at a faster rate so that it loses its

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UDC: 620.193:1:621.9.02

L 10711-67

ACC NR: AR6020047

shape. It is shown that when the stability of the electroerosion machining process is held constant, ferrite and ferrite-pearlite based cast iron with a high carbon concentration (C=4-4.28%) may be used as the electrode tool material to increase anode erosion by a factor of nearly 1.5 and reduce the relative volumetric wear of the cathode by a factor of 5 in comparison with LS-59 brass. 4 illustrations, 3 tables, bibliography of 6 titles. L. Tikhonova. [Translation of abstract]

SUB CODE: 11, 13

Card 2/2 *bjp*

ALEKSANDROV, V. P.

V. P. Aleksandrov

On the History Pertaining To The Study of the Arctic

The All-Union Geographic Society The News, Moscow  
Vol. 82, No. 4, July-August 1950, pp. 420-421

From Monthly list of Russian Accessions  
October 1950, Vol. 3, No. 7, p. 33

ALEKSANDROV, V.P.

Method of processing observations on currents in seas with tides.  
Trudy GOIN no.22:3-12 ' 52. (MIRA 12:1)  
(Tides)

ALEKSANDROV, V.P.

Formation of shallow-water tidal waves. Trudy GOIN no.64:103-111  
'61. (MIRA 14:8)

(Tides)

ZOLOTOV, V.I., inzh.; IL'INSKIY, D.Ya., inzh.; Prihimali uchastiye:  
ALEKSANDROV, V.P., inzh.; SOLOV'YEV, S.S., inzh.; BADANINA,  
A.I., kand.tekhn.nauk; FIRSOVA, K.A., kand.tekhn.nauk;  
KOLOSOVA, G.I., mladshiy nauchnyy sotrudnik

Effect of the geometry of the screw on the conditions of the  
extrusion of artificial leather. Nauch.-issl.trudy VNIIPK  
no.12:87-95 '60. (MIRA 16:2)

(Leather, Artificial)

ALEKSANDROV, V.P.

Determining some rheological characteristics of plastic materials for artificial leather on plasticizers (the "M" artificial leather). Kozh.-obuv. prom. 5 no.11:34-40 N '63. (MIRA 17:1)



ALEKSANDROV, V.R.

Treatment of some pustular skin diseases by galvanization. Vop.  
kur., fizioter. i lech. fiz. kul't. 25 no.2:174-175 ~~Mr-Apr '60~~  
(MIRA 13:9)

(SKIN—DISEASES)

(ELECTROTHERAPEUTICS)

ALEKSANDROV, V.R.

Treatment in recurrent hidradenitis and lymphadenitis with  
impulse galvanic current. Vop.kur., fizioter.i lech.fiz.kul't.  
28 no.1:77-78 '63. (MIRA 16:4)  
(ELECTROTHERAPEUTICS) (SWEAT GLANDS--DISEASES)  
(LYMPHATICS--DISEASES)

ALEKSANDROV, V. S.

Studying operations of the second degree in a set of rational numbers  
in the prerevolutionary Russian and the Soviet school. Uch.zap. Kar.  
ped.inst. 8:79-108 '59. (MIRA 13:11)

(Mathematics--Study and teaching)

ALEKSANDROV, V.S.

3(7)

63

PHASE I BOOK EXPLOITATION

SOV/1720

Leningrad. Glavnaya geofizicheskaya observatoriya.

Voprosy razrabotki meteorologicheskikh priborov (Problems in the Development of Meteorological Instruments) Leningrad, Gidrometeoizdat, 1958. 49 p. (Series: Its: Trudy, vyp. 83) 1350 copies printed.

Additional Sponsoring Agency: Glavnoye upravleniye gidrometeorologicheskoy sluzhby.

Ed. (Title page): M.S. Sternzat, Candidate of Physical-Mathematical Sciences; Ed. (Inside book): M.M. Yasnogorodskaya; Tech. Ed.: A.N. Sergeev.

PURPOSE: This issue is intended for scientific personnel engaged in the construction and use of meteorological instruments.

COVERAGE: In general, this booklet covers descriptions of new instruments and problems encountered in their development. It also describes methods used for selecting the optimum interval for averaging the velocity of the wind and for determining the aggregate composition of fogs. The instruments described in detail include a new  
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Problems in the Development (Cont.)

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automatic condensation hygrometer, a simple device for determining the composition of fog, a field radiometer, a device for measuring temperature, apparatus for actinometric observations and a device for measuring winds of high velocity. No personalities are mentioned. Bibliographies follow each article.

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Svarchevskiy, V.N. An Instrument for Registering the Velocity  
and Gusts of High Winds 43

AVAILABLE: Library of Congress

MM/sfm  
5-25-59

Card 3/3

AUTHORS: Aleksandrov, V.S., Epshteyn, S.I. SOV/32-24-9-46/53

TITLE: An Apparatus for Measuring the Thickness of Films  
(Pribor dlya izmereniya tolshchiny plenok)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 9, pp 1159-1160 (USSR)

ABSTRACT: The apparatus MTP-3 is described which is used for the continuous control of the thickness of films of organic materials of a density from 0.8 to 3 g/cm<sup>3</sup>. The measuring range covers thicknesses of films from 3 to 30 μ using the isotope C<sup>14</sup>, and from 30 to 300 μ using the isotope Tl<sup>204</sup>. A diagram of the apparatus is given. It consists of two units, in one of which there are the basic and compensation radiators, two ionization chambers, an electrometric cascade and a system of shuntings for the compensation source. In the other there are the supply sources: an amplifier for alternating current, a detector, a generator with a frequency of 2 kilocycles, and a buffer cascade. Ye.A. Yemel'yanov took part in assembling the apparatus. The tests of the apparatus showed that it meets all demands. It is easily to operate and it operates steadily. If the apparatus is carefully calibrated and if there is a constant thickness of the film the accuracy of this apparatus can be brought to 2-3%. The apparatus MTP-3 is at present produced in small series.

Card 1/2

Aleksandr V.S.

PHASE I RDX REFINATION 50/510  
Moscow. Vostochnyy nauchno-issledovatel'skiy Institut khimicheskikh reaktivov  
Yashchereva vostochny chistyty I reaktiv; atomik stroy (High Purity Substances  
and Reagents: Collection of Articles) Moscow, Sankhizdatkhim, 1972.  
286 p. (Series: Izdat'skiy, Vyp. 23) Krasna zilva inserted. 1,700  
copies printed.

Sponsoring Agency: USSR. Soviet Ministry. Gosplanovnyy komitet po khimii.  
Ed.: Yu.Y. Ivanov. Tech. Ed.: Ye.G. Shpak; Editorial Board of Series:  
V.G. Brada, V.M. Dolobov, R.P. Lazovskiy (Resp. Ed.), A.M. Loshin,  
G.S. Malkin, G.I. Mikheylov, G.A. Perlov (Deputy Resp. Ed.), and  
I.G. Shafran.

PURPOSE: This book is intended for personnel of chemical research and industrial  
chemical laboratories.

CONTENT: The book contains 36 articles by authors of the Scientific Research  
Institute for Chemical Reagents (VNI) treating methods which may be adapted  
by different branches of industry to producing, analyzing, and analyzing inor-  
ganic and organic substances of high purity. Figures, tables, and references  
accompany each article. No paraphrases are included.

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S/196/62/000/006/011/018  
E194/E154

AUTHORS: Aleksandrov, V.S., Voronetskiy, B.B., Portnoy, T.Z.,  
and Tishchenko, N.A.

TITLE: The present state of development of automated  
electric drives

PERIODICAL: Referativnyy zhurnal, Elektrotehnika i energetika,  
no.6, 1962, 1, abstract.6 Kl. (Vestn. elektroprom-  
sti, no.10, 1961, 7-12).

TEXT: Diagrams are given which show the relative number of  
drives in various branches of the national economy of the USSR  
and expected developments are described. New single-armature  
rolling mill motors are being developed with outputs of  
10000-12000 h.p. with high maximum output and good dynamic  
characteristics. Mercury-arc rectifiers are at present the main  
type of controlled rectifiers for industrial drive. It is  
proposed to manufacture sealed single-anode, grid-controlled  
mercury-arc rectifiers for anode currents of 250-350 and 500 A,  
including rectifiers with series connected valves and also  
modernised pumped mercury-arc rectifiers for currents up to  
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The present state of development ... S/196/62/000/006/011/018  
E194/E154

1000 A per anode. New static control systems for drives types  
УМ17 (UMP) and УМ31 (UMZP) with outputs up to 30 kW based on  
magnetic amplifiers have been developed and introduced.  
Amplifiers of up to 80 kVA per unit have been developed. ✓  
A number of new designs of automatic electric power generating  
sets of packaged design have been developed and investigations  
are being made on industrial prototype computer-controllers for  
automatic drives. Static systems with magnetic amplifiers have  
been used in the development of various drive control systems  
for metallurgy, mining, machine tool manufacture, paper machines,  
and power station auxiliaries. An automatically controlled  
drive has been developed in the metallurgical industry for a new  
automatic conveyor for charging the furnace. Automatic control  
has been provided for air heaters, casting machines, the  
furnace-top loading system and wagon weighing machines. Ionic  
rectifiers with a total current of about 1 million amps have  
been provided for non-reversing rolling mills. An ionic drive  
is being introduced for reversing rolling mills including the  
main drives of blooming and slabbing mills. Excavators  
Card 2/4

The present state of development ... S/196/62/000/006/011/018  
E194/E154

types EKG-4 (EKG-4) have been modernised by utilizing for the main drive d.c. generators controlled by power magnetic amplifiers, which have replaced three-winding generators and increased the output of the excavators. Direct current automatic drives have been provided for diesel-electric installations type 11A3 (11DE) and have increased the output of mine winding operations by a factor of 2-2.5 as compared with other installations. Ionic rectifiers have begun to be used for mine winders; industrial prototypes have been developed and constructed for high speed reversing equipment used in conjunction with ionic drives of multi-rope winders. For machine tools there have been developed a series of d.c. drives supplied from power magnetic amplifiers of 0.6-8 kW output. Ferro-transistor programmed digital computer control of machine tools has been developed using step-by-step motors and hydraulic amplifiers. A d.c. main drive system using silicon rectifiers of 50-100 kW has been developed and partially introduced in which the rotor speed is controlled by the field flux. An automatic drive system with continuous programme control has been developed for

Card 3/4

The present state of development ... S/196/62/000/006/011/018  
E194/E154

standard heavy horizontal milling machines, boring mills, and lathes. A number of heavy machine tools are provided with controlled ionic drives. A multi-motor drive with multi-generator supply system and contactless tachogenerators has been developed for paper machines, and has successfully passed industrial tests. An electrical drive system has been developed for a number of dry cargo ships, river icebreakers, and tugs. Future developments in drives are indicated.

[Abstractor's note: Complete translation.]

Card 4/4

ALEKSANDROV, V.S., inzh.; VORONETSKIY, B.B., kand.tekhn.nauk;  
PORTNOY, T.Z., inzh.; TISHCHENKO, N.A., inzh.

Present-day work in the field of automatically controlled electric  
driving. Vest. elektroprom. 32 no.10:7-12 0 '61. (MIRA 14:9)  
(Electric driving).

FATEYEV, N.P.; ALEKSANDROV, V.S.

Use of piezoelectric converters in measuring meteorological  
elements. Trudy GGO no. 112:3-13 '63. (MIRA 17:5)

ZORIN, V.N.; KONYUKHOV, I.N.; VINOGRADOV, B.N.; CHERNOBYL'SKIY, A.G.;  
ALEKSANDROV, V.S.

Reduction turbodrill for drilling slim and deep wells. Trudy  
MINKHIGP 46:27-34 '64. (MIRA 17:6)

L 39949-65 EMT(1)/FOC GW

ACCESSION NR: AR4047583

S/0169/64/000/009/8009/8009

AUTHOR: Aleksandrov, V. S.

TITLE: Small devices for the measurement of thermal radiation

SOURCE: Ref. zh. Geofizika, Abs. 9874

CITED SOURCE: Tr. Vses. nauchn. meteorol. soveshchaniya, 1961. T. 9. Gidrometeoizdat. 1963, 80-87

TOPIC TAGS: meteorology, thermal radiation, meteorological instrument, bolometer, electronic circuit

ABSTRACT: Amplifying circuits using direct and alternating current have been developed for use under field conditions with thermocouples and bolometers. The voltage from the thermocouple is converted by a contact converter into an alternating voltage with a frequency of 600 cps and is amplified and transformed into a constant voltage by a synchronous rectifier. An indicator or automatic recorder can be attached at the output. The stability of the amplifier is increased by the use of a dc negative feedback. The amplifier uses P-103 transistors. For work with a semiconductor bolometer there is a special light flux modulator of the tun-

Card 1/2



L 39949-65

ACCESSION NR: AR4047:83

ing fork type; modulation frequency is 20 cps. Small economical tubes of the stub type are used in the stages of the preamplifier. V. Golikov

ENCL: 00

SUB CODE: ES, EC

Card 2/2 J0

L 8939-65 EWT(d)/EWT(1)/EWG(v) Pe-5/Pg-4/Pk-4/P1-4/Pc-4/Pq-4/Pat-2 SSD/  
AFWL OW 8/2531/64/000/152/0172/0175  
ACCESSION NR: AT4040735  
AUTHOR: Aleksandrov, V. S.  
TITLE: An electronic thermostat  
SOURCE: Leninrad. Glavnaya geofizicheskaya observatoriya. Trudy\*,  
no. 152, 1964. Issledovaniya radiatsionnykh protsessov (Investiga-  
tions of radiation processes), 172-175  
TOPIC TAGS: thermostat, electronic thermostat, air temperature con-  
trol, electronic temperature control, aircraft radiation temperature  
measurement  
ABSTRACT: A device is described (see Fig. 1 of the Enclosure) which  
regulates and controls the temperature of the housing of a thermal  
element (TK 3 : 1.5) used in airborne instruments for measuring the  
radiation temperature of the underlying surface. It consists es-  
sentially of two independent circuits (described in detail), one for  
maintaining a given temperature, the other for measuring temperature.  
Thermal stabilizing elements incorporated in the amplifiers permit  
operation within a temperature range of -10 to +40C. A thermistor,  
located in one arm of the bridge, acts as the sensor for the system.  
Card 1/3

L 8939-65

ACCESSION NR: AT4040735

Temperature control is based on variations in the resistance of the thermistor responding to temperature changes in the housing of the thermal element. The device (having an aluminum casing with overall dimensions of 300 x 250 x 200 mm) operates on semiconductors fed by the electrical system on the plane and maintains a given temperature within a range of -15 to +35C, measured to an accuracy of 0.1C. Orig. art. has: 2 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 00

ATD PRESS: 3109

ENCL: 01

SUB CODE: EB,TD

NO REF SOV: 000

OTHER: 000

Card 2/3

L 8939-65  
ACCESSION NR:

AT4040735

ENCLOSURE: 01

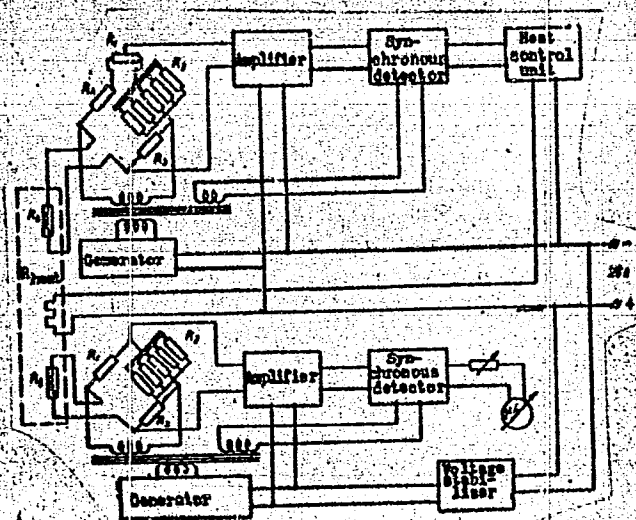


Fig. 1. Schematic diagram

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DANCHENKO, Yu.Ye., inzh. (Ryazan'); ALEKSANDROV, V.S., inzh. (Ryazan')

Steam takeoff from the chamber of the control stage of the  
AT-12 turbine, Energetik 13 no.8:9-10 Ag '65. (MIRA 18:9)

ALEKSANDROV, V. T.

Aleksandrov, V. T. -- "Investigation of Filtration in Homogeneous Drained Flat Soils on a Water-Permeable Base." Min Higher Education USSR. Moscow Inst of Water Economy Engineers imeni V. F. Vil'yams. Moscow, 1955. (Dissertation for the Degree of Candidate in Technical Science)

So: Knizhnaya Letopis', No 12, 1956

.USSR / Farm Animals. Swine

Q

Abs Jour: Ref Zhur-Biol., No 5, 1958, 21483

Abstract: weaning, and if a multiple-litter sow produces 16 pigs and a one-litter sow farrows 7 pigs, then the feeding costs per 1 pig amount to 90 feed units for multiple-litter sow progeny; and for one-litter sow progeny, the same costs amount to 95 feed units. The fertility of sows in the 7 kolkhozes of the Voronezh Oblast was, for multiple-litter sows, 8.2 pigs; for one-litter sows, 6.2 pigs; and in the 7 swine breeding sovkhoses of the same Oblast, 8.8 and 7.5 pigs, respectively. An average weight of the pigs at the age of 2 months in the sovkhos "Klenovo-Chegodayevo" amounted to 17.1 kg. in the case of multiple-litter sows, and 15.1 kg. in the case of one-litter sows. It is recommended to breed one-litter sows farrowed by prolific mothers, whose progeny, when fattened would produce a weight increase not less than 14-15

Card 2/3

ALEKSANDROV, V. T.

AUTHOR: SVECHNIKOV, S.V., ALEKSANDROV, V.T.      PA - 3541  
TITLE: Some Photoelectric Properties of CdSe and CdTe Monocrystals.  
(Nekotoryye fotoelektricheskiye svoystva CdSe- i CdTe-monokristal-  
lov (Russian))  
PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 5, pp 919 - 920 (U.S.S.R.)  
ABSTRACT: CdSe and CdTe monocrystals were obtained on the occasion of the  
reaction of selenium and tellurium vapors with cadmium at high  
temperatures in a neutral medium with following crystallization  
of the vaporous phase. Both crystals have photoelectric properties  
in the visible and in the infrared part of the spectrum. From the  
curves obtained it may be seen that with a rise of the atomic  
number of the element, which enters into connection with cadmium,  
the domain of spectral receptivity extends, but that the maximum  
of photosensitivity shifts in the direction of the long wave part  
of the spectrum. Accordingly, the thermal energy of the activation  
of CdSe and CdTe is lower than that of CdS. Also the light character-  
istics of both monocrystals differ. The specific weight of the  
nonlinear dependence of the photocurrent on exposure is much  
greater in the case of CdSe and CdTe than with CdS monocrystals.  
The extension of the nonlinear domain in the case of the character-  
istics of CdSe and CdTe monocrystals is very marked in their  
volt-ampere characteristics. Also the relaxation processes of the

Card 1/2



L 52197-65 EWT(d)/EWT(l)/EWT(m)/EWP(w)/EPF(c)/EPF(n)-2/ENG(m)/EWA(d)/EWP(v)/EPR/  
EWP(k)/EWA(h) Pf-4/Pr-4/Ps-4/Peb/Pu-4 III/EM

ACCESSION NR: AP5013916

UR/0170/65/000/005/0609/0612  
536.3

AUTHOR: Aleksandrov, V. T.

39  
38  
B

TITLE: Determining the radiation form factor for a system of two coaxial cylindrical bodies

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 5, 1965, 609-612

TOPIC TAGS: radiation heat transfer, integral equation, cosine law

ABSTRACT: The radiation form factors were calculated for a coaxial cylindrical geometry. Five radiation coefficients are defined: radiation between outside cylinder and cylinder end; between outside and inside cylinder; outside cylinder self-radiation; between inside cylinder and cylinder end; and between inside cylinder and outside cylinder. These are denoted, respectively, by the subscripts HT, HB, HH, BT, and BH. The form factor is defined according to Lambert's cosine distribution law

$$F_{12} = \frac{1}{\pi S_1} \int_{S_1} dS_1 \int_{S_2} \frac{\cos \varphi_1 \cos \varphi_2}{r^2} dS_2$$

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L 52197-65

ACCESSION NR: AF501391

and the various form factors are related by the expressions

$$\begin{aligned} \varphi_{BT} + \varphi_{BT} + \varphi_{BH} &= 1, \\ \varphi_{BT} + \varphi_{BH} &= 1, \\ \varphi_{BT} S_a &= \varphi_{BH} S_a. \end{aligned}$$

The solution of the self-radiation factor  $\varphi_{HH}$  leads to the expression

$$\begin{aligned} \varphi_{HH} &= 1 - \frac{2}{\pi} \beta/a \operatorname{arc} \operatorname{tg} \frac{1}{\sqrt{1 - (\beta/a)^2}} + \\ &+ \frac{1}{\pi a} \operatorname{arc} \sin \sqrt{1 - (\beta/a)^2} - \\ &\frac{\sqrt{1 + 4a^2}}{\pi a} \operatorname{arc} \operatorname{tg} [\sqrt{1 + 4a^2} \times \\ &\times \operatorname{tg} \operatorname{arc} \sin \sqrt{1 - (\beta/a)^2}]. \end{aligned}$$

Similar expressions for  $\varphi_{HB}$ ,  $\varphi_{HT}$ ,  $\varphi_{BT}$ ,  $\varphi_{BH}$  are solved numerically, and the

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L 52197-65

ACCESSION NR: AP5013916

results shown graphically. Orig. art. has: 10 equations and 2 figures.

ASSOCIATION: Politekhnicheskij Institut, g. Kiyev (Polytechnic Institute)

SUBMITTED: 24Jul64

ENCL: 00

SUB CODE: TD, ME

NO REF. SOV: 002

OTHER: 000

*llc*  
Card 3/3

L 112095-66 ENT(1)

ACC NR: AP6029033

SOURCE CODE: UR/0413/66/000/014/0049/0049

INVENTOR: Vishnevskiy, A. I.; Aleksandrov, V. T.; Belonsov, A. A.

ORG: none

TITLE: Self-heating diode<sup>25</sup> Class 21, No. 183839

24  
B

SOURCE: Izobret prom, obraz cov zn, no. 14, 1966, 49

TOPIC TAGS: diode, electron tube, cathode

ABSTRACT: An Author Certificate has been issued for a self-heating diode (see Fig. 1) with an anode which serves as a heat-radiating element. To increase the efficiency,



Fig. 1. Self-heating diode

1 - Thermal shield; 2 - cathode;  
3 - anode; 4 - starting heater.

Card 1/2

UDC: 621.385.2.032.269

C A ALEKSANDROV, V-V

Activity coefficients of hydrochloric acid in butyl alcohol.  
N. A. Izmailov and V. V. Aleksandrov (Gor'ki State Univ.,  
Khar'kov). *Zhur. Fiz. Khim.* 24, 1044 (1950). The

e.m.f.  $E$  of the cell  $\text{PtH}_2|\text{HCl}, \text{BuOH}|\text{AgCl}, \text{Ag}$  without liquid junction was detd. to 4545, 3807, 3610, 3226, 2653, 2419, 1890,  $1829 \times 10^{-4}$  v., resp., for  $m$  (= molarity of  $\text{HCl}$ ) = 3, 24, 57, 114, 270, 570, 1140,  $5700, 11400 \times 10^{-4}$ . The e.m.f. of the same cell, but with  $\text{H}_2\text{O}$  as solvent, was also detd. as a means of checking the accuracy of the apparatus. The normal potential  $E_0$  of the cell with  $\text{H}_2\text{O}$  is calcd. to  $E_0 = 0.2220$  v., compared with Scatchard's  $E_0 = 0.2226$  v. The normal potential  $E_0'$  of the cell with  $\text{BuOH}$  was calcd. by the method of Harnad. The unknown dissociation const.  $K$  of  $\text{HCl}$  in  $\text{BuOH}$  was detd. by extrapolation in a diagram ( $\rho K, 1/D$ ) where  $D$  is the dielec. const. of the solvent; the values of  $\rho K$  are, resp., 1.06, 1.95, 2.43 for  $\text{MeOH}$ ,  $\text{EtOH}$ ,  $\text{PrOH}$ . For  $\text{BuOH}$ ,  $\rho K = 3.1$ . A similar value is obtained with Fuoss and Kraus' method. Activity coeffs.  $\gamma'$  and  $\gamma$  are defined by  $0.1183 \log \gamma' = E_0' - E + 2k \ln m$  and  $0.1183 \log \gamma = E_0 - E + 2k \ln m$ . Values of  $\gamma/\gamma'$  decrease very rapidly with increasing  $m$ . The coeff.  $\gamma_0 = \gamma/\gamma'$  has a theoretical significance. Izmailov (C.A. 43, 7304g) showed that  $\log \gamma_0$  is detd. by the dielec. const. of the medium and by its basicity:  $\log \gamma_0 = \log \gamma_1 + 0.5 \log \gamma_2$  where  $\log \gamma_1$  is inversely proportional to  $D$  and  $\log \gamma_2 = \log K'$ . The quantity  $K'$  is the equl. const. of  $\text{BuOH}_2^+ + \text{H}_2\text{O} \rightleftharpoons \text{BuOH} + \text{H}_3\text{O}^+$ . Ooms and Kolkhof (C.A. 34, 4068i) detd.  $K' = 0.033$ . Knowing  $K'$  and  $\log \gamma_0 = 2.604$ , one gets  $\log \gamma_1 = 1.306$ . The aim of the work was to det.  $\log \gamma_1$  for  $\text{BuOH}$  and to verify the theory by comparing the values obtained with the values previously obtained for other alcs. The new value fits a straight line detd. by the previous data in a plot ( $\log \gamma_1, 1/D$ ). The theory is confirmed.  
Michel Boudart

ALEKSANDROV, V.V.

IZMAYLOV, N.A.; SHKODIN, A.M.; ~~ALEKSANDROV, V.V.~~

Discussion of the activity method in thermodynamics of real systems.  
Ukr.khim.zhur. 19 no.5:572-583 '53. (MLBA 8:2)

1. Kharkovskiy gosudarstvennyy universitet im. A.M.Gor'kogo,  
kafedra fizicheskoy khimii.  
(Thermodynamics)(Systems 9Chemistry))

ALEKSANDROV, V.V.

IZMAILOV, N.A.; SHKODIN, A.M.; ALEKSANDROV, V.V.

More on the activity method in thermodynamics of real systems.  
Ukr.khim.nauk 20 no.1:100-102 '54. (MLRA 7:3)

1. Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo.  
(Solution (Chemistry)) (Thermodynamics)

АЛЕКСАНДРОВ, В.В.

AUTHORS: Izmaylov, N.A., Aleksandrov, V.V. 76-12-3/27

TITLE: Thermodynamic Properties of Electrolytes in Non-Aqueous Solutions (Termodinamicheskiye svoystva elektrolitov v nevodnykh rastvorakh). IV. Investigation of Thermodynamic Properties of Hydrogen Chloride in Alcohols (IV. Issledovaniye termodinamicheskikh svoystv khloristogo vodoroda v spirtakh).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 12, pp.2619-2626 (USSR)

ABSTRACT: This work is devoted to the investigations of influences of chemical nature, and to the dielectric properties of the solvent on the thermodynamical properties of strong acids. The electromotive forces (EMF) of the  $Pt(H_2) | HCl | AgCl.Ag$ -chain in isopropyl-, n-butyl-, isobutyl-, isoamyl-, and benzil-alcohols were investigated within a vast range of hydrogen-chloride concentration. It is shown that differences in the energy-states of hydrogen-chloride ions in diluted water- and alcohol solutions form the primary effect of the medium. The normal potentials of the afore-mentioned chain were determined in all investigated solvents on the strength of the obtained test data and the zero- and ordinary coefficients of the activity of hydrogen-chloride were computed. These data allow to determine clearly

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Thermodynamic Properties of Electrolytes in Non-Aqueous  
Solutions. IV. Investigation of Thermodynamic Properties  
of Hydrogen Chloride in Alcohols

76-12-3/27

the differences in the chemical energies of the solvation of hydrogen chloride ions in infinitely diluted water solutions, and in non-aqueous solvents. This is explained by the fact that the here obtained data are not rendered difficult by diffusion- or phase potentials at the solution-vacuum-limit. The computation of these values is based on the condition that the normal potential of the chain is a value proportional to the chemical reaction-work taking place in the voltaic cell.  $\text{AgCl} + 1/2\text{H}_2 \rightleftharpoons \text{Ag} + \text{HCl}$ . It is assumed here that this reaction takes place under standard conditions, i.e. with an activity equal to one of the substances participating in the reaction, and a hydrogen partial pressure equal to 1 atmosphere. The difference of the normal potential values in water and in alcohols, multiplied with  $zF$  gives the difference of the work at the formation of the HCl-equivalent in the corresponding solvents. This becomes clear if one takes into account that the AgCl and Ag, which participate in the reaction, are solid substances, the energy-state of which does not depend on the solvent, whereas the hydrogen partial pressure equal 1 atmosphere, is kept. The initial states of the system do consequently not depend on the solvent, whereas the final states distinguish only by the fact that in the first case the hydrogen

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Thermodynamic Properties of Electrolytes in Non-Aqueous  
Solutions. IV. Investigation of Thermodynamic Properties  
of Hydrogen Chloride in Alcohols

76-12-3/27

chloride is formed in an alcohol solution and in the second case in an aqueous solution. Since the values of the normal potentials were related to the infinite dilution (as standard) (where hydrogen chloride can be considered as completely dissociated to the ions), the wanted value:

$$zF(E_{O}^{H_2O} - E_{O}^{M})$$

forms the difference of the amount of chemical works of solvation, and hydration of hydrogen- and chlorine ions in infinitely diluted solutions, whereas the value  $\lg \gamma_{O}$  represents a value proportional to the medium difference from solvation energy and hydrogen energy. It is shown that the difference of the normal potentials of the investigated chain, and the value  $\lg \gamma_{O}$  are no linear function of the reciprocal value of the dielectric constants. Therefore, in the acid solutions, the change of the energy-state of the ions at the transition of one solvent to the other, cannot be expressed only by the change of the dielectric properties of the medium. It is shown that the acid-ion energy depends also on the basicity of the solvent. The linear dependence of the value  $\lg \gamma_{O}^{e_1}$  of  $1/D$  is confirmed.

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Thermodynamic Properties of Electrolytes in Non-Aqueous Solutions. IV. Investigation of Thermodynamic Properties of Hydrogen Chloride in Alcohols

76-12-3/27

M - non-aqueous solvent,  $E_0$  - normal potential of the chain.  $\delta_0$  - characterizes the change of the medium free ion-energy at the transition of infinitely diluted non-aqueous solution to an equal solution in water. Finally, the spectra of the methyl-yellow absorption were obtained in the same alcohols with small additives of water and the constants for the proton exchange between the investigated alcohols and water were obtained according to these data. There are 3 figures, 2 tables, and 29 references, 10 of which are Slavic.

ASSOCIATION: Khar'kov State University imeni A.M.Gor'kiy (Khar'kovskiy gosudarstvennyy universitet im. A.M.Gor'kogo).

SUBMITTED: July 2, 1956

AVAILABLE: Library of Congress

Card 4/4

IZMAYLOV, N.A., prof.; ALEKSANDROY, V.V.; IVANOVA, Ye.F.

Thermodynamic properties of electrolytes in nonaqueous solutions.  
Uch. zap. KHGU 95:5-24 '57. (MIRA 12:10)  
(Electrolytes) (Thermodynamics)

ALEKSANDROV, V.V.; IVANOVA, Ye.F.

Conference on the effects of solvents on the properties of electrolytes,  
dedicated to the Fortieth Anniversary of the Great October. Uch. zap.  
KHGU 95:277-281 '57. (MIRA 12:10)  
(Solution (Chemistry)--Congresses))

AUTHORS: Aleksandrov, V. V. , Izmaylov, N. A. 76-32-2-25/38

TITLE: The Thermodynamic Properties of Electrolytes in Non-Aqueous Solutions (Termodinamicheskiye svoystva elektrolitov v nevodnykh rastvorakh). V.An Investigation of the Thermodynamic Properties of Hydrogen Chloride in Alcohol-Water Mixtures (V.Issledovaniye termodinamicheskikh svoystv khloristogo vodoroda v spirto-vodnykh smesyakh)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 2, pp. 404-412 (USSR)

ABSTRACT: The influence of a water addition on the electromotive forces of the  $Pt(H_2) HCl AgClAg$  chain in ethyl-, butyl- and isobutyl-alcohol was investigated. These solvents were treated according to the method described in the previous papers (refs.1,8). The electrodes were also produced according to the method described already. The measuring of electromotive force was carried out by means of a valve voltmeter with a sensitivity of  $5 \cdot 10^{-5}$  V/mm (ref.9). In order to determine the quantitative relation between the normal potential and the composition of the mixture solvent and the dielectric properties of it the

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The Thermodynamic Properties of Electrolytes in Non-Aqueous Solutions. V. An Investigation of the Thermodynamic Properties of Hydrogen Chloride in Alcohol-Water Mixtures 76-32-2-25/38

work done by the galvanic cycle without a transport in the mixture solvent was investigated from the thermodynamic standpoint. The electric work done by the chain  $\text{Pt}(\text{H}_2) \text{HCl} \text{AgClAg}$  can be equalized to the work of the chemical process when one Farad ( $96485 \text{ C}$ ) passes through. After the measurement of the values of electromotive force the normal potentials of the cycle with various water content in the mixture (0,05, 0,1 0,5 and 1 M) were determined and the zero- $(\lg \gamma_0)$  and concentration activity coefficients were compared. The equation of the dependence of the normal potential of the cycle investigated in alcohol-water mixtures and of the  $\lg \gamma_0$ , of the dielectric properties, the basicity of the non-aqueous solvent and of the water concentration in the mixture are given. It reads :

$$E_o^{cm} - E_o^m = 0,059 \lg \left( 1 + \frac{K_r \cdot c_{\text{H}_2\text{O}}}{c_m} \right) \quad c_m^0 \text{ denoting the number of mols. of the non aqueous solvent per unit volume}$$

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The Thermodynamic Properties of Electrolytes in Non-Aqueous Solutions. V. An Investigation of the Thermodynamic Properties of Hydrogen Chloride in Alcohol- Water Mixtures 76-32-2-25/38

$E^{cm}$  denoting the electromotive force in the mixture solvent  
 $E_o^{cm}$  denoting the normal potential in the pure non-aqueous solvent. The equation is an approximated expression for the modification of the normal potential of the cycle by small additions of water.- It is further stated that different from pure non-aqueous solvents(ref.1) the quantity  $lg \gamma_o^{el}$  in alcohol-water mixtures does not form any linear function of  $1/D$  within the total interval of variation of the composition of the solvent. The linear character is maintained only up to 80 molar% of a non-aqueous solvent. It is assumed that the disturbance of the linear dependence of  $lg \gamma_o^{el}$  on  $1/D$  is the result of the rearrangement of the solvation shells of the  $H_3O^+$  ions and of the anion in the case of a change of the composition of the solvent; i.e. the deviations from the linearity are connected with the energy difference in the interaction of the ions of the

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The Thermodynamic Properties of Electrolytes in Non-Aqueous Solutions. V. An Investigation of the Thermodynamic Properties of Hydrogen Chloride in Alcohol-Water Mixtures 76-32-2-25/38

dissolved acid with the water molecules as well as of the non-aqueous solvent in the solvation shells. A new method is suggested for the determination of the proton exchange constant in the exchange of the proton between the non-aqueous solvent and water, according to the change of the potential under the influence of small additions of water. There are 3 figures, 5 tables and 9 references, 4 of which are Soviet.

ASSOCIATION: Khar'kovskiy gosudarstvenny universitet im. A. M. Gor'kogo (Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: November 30, 1956

1. Hydrogen chloride--Thermodynamic properties 2. Alcohols--Chemical reactions 3. Water--Chemical effects 4. Organic solvents --Electrochemistry

Card 4/4

AUTHORS: Aleksandrov, V. V., Ivanova, Ye. F. 76-32-4-42/43

TITLE: Chronicle (Khronika).  
Transactions of the Conference on the Effect of Solvents  
on the Properties of Electrolytes (Soveshchaniye po vo-  
prosu vliyaniya rastvoriteley na svoystva elektrolitov)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 4,  
pp. 960-962 (USSR)

ABSTRACT: This conference took place at Khar'kov from 14-16, 1957  
and was called by the Chemical and Geological Department  
of the Ukrainian Academy of Sciences, ~~the Khar'kov univer-~~  
sity imeni A. M. Gor'kiy as well as by the Khar'kov  
~~Obldst Administration~~ of the All Union Chemical Society  
imeni D. I. Mendeleyev. Specialists in the field of so-  
lutions from Leningrad, Moscow, Ivanovo, Tashkent and  
other towns of the Union took part in it; the program  
dealt with the discussion of the problems on electrolyte-  
-solution solvation, ion association and the influence  
of solvents and of temperature on the thermodynamical  
properties of electrolytes. After the introduction by

Card 1/3

Chronicle. Transactions of the Conference on the  
Effect of Solvents on the Properties of Electrolytes

76-32-4-42/43

N. A. Izmaylov (Khar'kov) 8 lectures and 11 communications were held and delivered, among them; the contribution by K. P. Mishchenko (Leningrad) "The Role of Soviet Scientists in the Development of **Concepts Concerning Solutions**", by S. V. Gorbachev (Moscow) "Modern Problems of the Theory of Electrolytes", by A. F. Kapustinskiy (Moscow): "The Hydration of Ions, Their Mechanism and the Structure of Ion Hydrates" delivered by S. I. Drakin, by K. B. Yatsimirskiy (Ivanovo): "The Entropy of Ion-Solvation", by Ya. A. Fialkov and Z. A. Sheka (Kiyev): "The Phenomenon of Association as one of the Formation Factors of Electrolytic Non-Aqueous Solutions", by I. S. Galinker (Khar'kov): "On the Properties of Aqueous Electrolyte Solutions at High Temperatures", by N. A. Izmaylov: "The Influence of Solutions on the Properties of the Electrolyte", by A. M. Sukhotin (Leningrad): "New Directions for the Development of the Theory of Non-Aqueous Electrolyte Solutions", as well as the reports by S. I. Drakin and V. A. Mikhaylov (Moscow), K. P. Mishchenko and Ye. A. Podgornaya (Leningrad), Ye. V. Kiseleva (Moscow), O. M. Konovalov (Khar'kov),

Card 2/3

Chronicle. Transactions of the Conference on the  
Effect of Solvents on the Properties of Electrolytes

76-32-4-42/43

S. S. Urazovskiy and I. P. Kotlyarenko (Khar'kov), K. S. Karetnikov (Moscow), F. N. Kozlenko (L'vov), Ya. A. Fialkov and V. B. Charnogorenko (Kiyev), V. I. Dulova (Tashkent), Ye. I. Vaylem (Khar'kov) and L. L. Spivak (Khar'kov). Short contents of the reports are mentioned. In a discussion at this conference among other demands increased cooperation was desired.

AVAILABLE: Library of Congress

1. Electrolytes--Properties
2. Electrolytes--Effects of solvents

Card 3/3

ALEXANDROV, N. V.

30V/2809

PHASE I BOOK EVALUATION

24(8)

Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk

Termodinamika i stroyneniye rastvorov; truly soveshchaniya... (Thermodynamics and Structure of Solutions; Transactions of the Conference Held January 27-30, 1958) Moscow, Izd-vo AN SSSR, 1959. 295 P. 3,000 copies printed.

Ed. I. M. I. Shadrarov, Doctor of Chemical Sciences; Ed. of Publishing House: M. G. Tregorov; Tech. Ed.: T. V. Polyakova.

RUSSIAN: This book is intended for physicists, chemists, and chemical engineers.

COVERAGE: This collection of papers was originally presented at the Conference on Thermodynamics and Structure of Solutions sponsored by the Section of Chemical Sciences of the Academy of Sciences, USSR, and the Department of Chemistry of Moscow State University, and held in Moscow on January 27-30, 1958. Orificers of the conference are listed in the foreword. A list of other reports also read at the conference, but not included in this book, are given in the foreword. Problems are presented in the form of electrostatic solution, viscometric measurement, dielectric and thermodynamic properties of various mixtures, spectroscopic analysis, etc. References accompany individual articles.

Shadrarov, M. I. Present Problems of the Thermodynamic Theory of Solutions of Nonelectrolytes 36

Skolov, V. P. Fluctuation of Energy in Solutions and Their Relation to Heat Capacity 43

Fisher, I. Z., and V. I. Kuz'mich. Molecular Theory of Solubility 48

Krichavskiy, I. E., and M. Ye. Khasrova. Critical Phenomena in Binary Liquid Systems 49

Mozdraz, V. P. Study of the Critical States of Individual Compounds and of Their Mixtures With the Aid of Ultrasonic Methods 56

Bartenev, D. M., and A. A. Remizova. Phase Transitions in Simple Systems and Their Classification 67

Podgryzay, R. B. Use of Ultrasonic Measurements in the Study of Solutions 72

Armatolavskiy, V. V., and K. I. Zemborak. Transformation of Binary Heteroanisotropes into Homoisotropes and Homozotropes 79

Storonkin, A. V., and A. G. Korshchinskik. Applicability of Konvalov's and Trevalky's Laws to Ternary Solutions 87

Storonkin, A. V., and M. M. Zhulika. Relation of Thermodynamic Properties of Saturated and Nearly Saturated Ternary Solutions to Their Composition 93

Mahabambo, W. F. Thermodynamic Properties of Water in Solutions of Electrolytes 97

Isariyov, M. A. Dissociation of Electrolytes in Nonelectrolyte Solutions 105

Aleksandrov, V. I., and Ye. P. Ivanova. Thermodynamic Properties of Nonelectrolyte Solutions of Electrolytes 118

Imaylov, M. A., V. A. Krumer, L. M. Kutsyna, and Ye. V. Titov. Study of the Effect of Solvents on the Strength of Acids by Means of Optical Methods 122

Kholodkiy, B. B. Dissociation of Acids and Complex Compounds and Methods of Studying It 126

Yatsimirskiy, I. B. Change in Thermodynamic Functions in Reactions of Association of Ions in Solutions 133

Vasil'yev, V. P. Thermodynamics of "Aquacomplexes" 140

Leuzal, Sidor. Study of Partial Pressure of Solvent in Aqueous Solutions of Electrolytes 144

King, Stefan. Interactions of Proton With Molecules (Water, and Methyl Ethyl Ether, Ethanol, Ethyl Alcohol) 152

24(6) 24.7700

66339

SOV/181-1-10-14/21

AUTHORS: Aleksandrov, V. V., Pruzhinina, V. I., Rekov, A. I., Tarakanova, T. S., Teplov, Ye. A.

TITLE: Some Electric Properties of Boron-Silicon Carbides

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 10,  
pp 1587 - 1591 (USSR)

ABSTRACT: Boron-silicon carbides (BSC) were burned in furnaces at  $\sim 2000^{\circ}\text{C}$ . End product: approximately 50-70 kg. Sample Nr 1, BSC-1 (composition:  $\text{B}_2\text{SiC}$ ), is likely to be produced according to the reaction equation  $2\text{H}_3\text{BO}_3 + \text{SiO}_2 + 6\text{C} = \text{B}_2\text{SiC} + 3\text{H}_2\text{O} + 5\text{CO}$ , while BSC-2 (composition:  $\text{B}_4\text{C} \cdot 2\text{SiC} = \text{B}_4\text{Si}_2\text{C}_3$ ) is probably formed according to the reaction equation  $4\text{H}_3\text{BO}_3 + 2\text{SiO}_2 + 13\text{C} = \text{B}_4\text{Si}_2\text{C}_3 + 6\text{H}_2\text{O} + 10\text{CO}$ . Results of chemical analysis of the two druse-shaped samples are given in table 1. For results of electric measurements see figure 1 (dynamic volt-ampère characteristics of BSC-1, BSC-2 and Si(samples), figure 2 (volt-ampère characteristics of BSC-1, BSC-2 and SiC samples) and figure 3 (dependence of voltage on temperature of BSC-1,

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Some Electric Properties of Boron-Silicon Carbides

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SOV/181-1-10-14/21

BSC-2 and SiC samples at constant current). Analysis of the results permits the following conclusions: 1) The nonlinearity of BSC used in engineering is inferior to that of SiC applied in electrical engineering. 2) The resistivity of the barrier layer of BSC is lower than that of the corresponding SiC layer, while the resistivity of thick BSC crystals exceeds that of thick SiC samples. The high resistivity of thick BSC grains allows to produce high-resistance volume resistors from them. They are virtually linear and may have great or small temperature coefficients. Results of measurement concerning the electric properties of BSC resistors will later be published. There are 3 figures, 2 tables, and 6 references, 4 of which are Soviet.

SUBMITTED: February 10, 1959

Card 2/2

5(4)

05830

AUTHORS:

Aleksandrov, V. V., Izmaylov, N. A.

SOV/76-33-10-28/45

TITLE:

Thermodynamic Properties of Electrolytes in Non-aqueous Solutions. VI. Concentration Coefficients of the Activity of HCl in Alcohols and Water - Alcohol Mixtures

PERIODICAL:

Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2288 - 2294 (USSR)

ABSTRACT:

In continuation of previous articles the authors investigated the dependence of the ionic energy and state on the concentration in solutions with various solvents. The electromotive force of the mean concentration-activity coefficients of HCl was measured and expressed as a standard with respect to an infinite dilution in the given solvent. The resultant values of the activity coefficients of HCl (Table: in isopropanol, n-butanol, isobutanol, isoamyl alcohol and benzyl alcohol) indicate that the variations in the energetic state of ions in the solution of electrolyte concentration are greatly dependent also on the nature of the solvent and can be defined by the Debye theory only within the narrow range of solutions of maximum dilution. With rising concentration the activity coefficients drop con-

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05830

Thermodynamic Properties of Electrolytes in Non-aqueous Solutions. VI. Concentration Coefficients of the Activity of HCl in Alcohols and Water - Alcohol Mixtures SOV/76-33-10-28/45

tinuously (Fig 1) without attaining a minimum (as is the case with aqueous solutions). The latter is explained by the association of ions in solvents of a comparatively small dielectric constant and a low degree of basicity. In order to clarify this problem, the authors calculated the ionic activity coefficients of HCl in methanol and ethanol (Ref 2) since there are data available in publications on the constants of HCl association for these alcohols. Contrary to experimental curves (Figs 2,3), the function curves calculated pass through a minimum, which confirms the association of HCl ions. The activity coefficients of HCl in alcohol mixtures of low water content (at low HCl concentration) are in agreement with those found for pure, anhydrous solutions. At higher HCl concentrations, the activity coefficients of HCl vary with the concentration in a similar manner as in aqueous solutions. In alcohol - water mixtures a large number of the hydrogen ions is tightly bound to the water molecules in the form of  $H_3O^+$ . This aggravates ionic association which has effects at higher HCl concentrations in an alcohol - water mixture. There are 8 figures, 1 table, and 4 references,

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05830

Thermodynamic Properties of Electrolytes in Non-aqueous Solutions. VI. Concentration Coefficients of the Activity of HCl in Alcohols and Water - Alcohol Mixtures

3 of which are Soviet.

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet im. A. M. Gor'kogo  
(Khar'kov State University imeni A. M. Gor'kiy)

SUBMITTED: March 29, 1958

Card 3/3

ALEKSANDROV, V.V.; YERSHOV, Yu.A.

Free energy of solvation of KI in ethanol and acetone. Dokl.  
AN SSSR 132 no.6:1327-1328 Ja '60. (MIRA 13:6)

1. Institut khimicheskoy fiziki Akademii nauk SSSR i Khar'kovskiy  
gosudarstvennyy universitet im. A.M.Gor'kogo. Predstavleno  
akademikom V.N.Kondrat'yevym.

(Potassium iodide) (Ethyl alcohol) (Acetone)

SHVARTZ, A.G., FROLKOVA, V.O., TYURINA, V.S., ALEKSANDROV, V.V.,  
BOGUSLAVSKIY, D.B.

Perfecting the rubber mixture composition, based on butyl rubber,  
for diaphragms in the formator-vulcanisers.

Report submitted for the 4th Scientific Research conference on the Chemistry  
and technology of synthetic and natural rubber. Yaroslavl, 1962

IVANOVA, Ye.F.; ALEKSANDROV, V.V. (Khar'kov)

Thermodynamic properties of electrolytes in nonaqueous  
solutions. Part 15. Zhur. fiz. khim. 38 no.4:878-884 Ap '64.  
(MIRA 17:6)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M. Gor'kogo.

ACCESSION NR: AP4049603

S/0076/64/038/011/2608/2613

AUTHOR: Lebed', V. I. (Khar'kov); Aleksandrov, V. V. (Khar'kov) B

TITLE: Electromotive force and normal potentials of cells without transport at various temperatures

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 11, 1964, 2608-2613

TOPIC TAGS: electromotive force, normal potential, concentration cell, temperature dependence

ABSTRACT: The temperature dependence of the electromotive force of concentration cells without transport has been studied by other authors rather extensively, but not systematically. In the present paper, the normal potentials of the cells  $\text{Me}_x\text{Hg} \cdot \text{MeCl} \cdot \text{AgCl} \cdot \text{Ag}$  (where Me is Li, Na, K, Rb, Cr) were determined in normal solutions of the halides of these metals in the concentration range 0.005 to 0.2, at temperatures of 25, 50, and 90 C. The greatest change in the normal potentials with temperature was found in cells with solutions of Li-salts, particularly in LiCl, and in iodides of other metals. The activity coefficients of the

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ACCESSION NR: AP4049603

alkali metal chlorides at the temperatures investigated were determined. Orig.  
art. has: 2 figures and 4 tables

ASSOCIATION: Khar'kovskiy gosudarstvennyy universitet (Khar'kov State  
University)

SUBMITTED: 16Sep83

ENCL: 00

SUB CODE: SS, EM

NO REF SOV: 005

OTHER: 017

Card 2/2

AleksANDROV, V.V.

✓ Effect of the method of starch hydrolysis on the properties of sirup. V. V. Aleksandrov, N. V. Afanas'eva, and V. S. Gryuner. *Trudy Vsesoyuz. Nauch.-Issledovatel. Inst.*

*Konditerskoi Prom.* 1953, No. 9, 49-72; *Referat. Zhur., Khim.* 1954, No. 49143.—A sirup suitable for the production of caramels can be obtained by enzyme hydrolysis of starch. This method uses an  $\alpha$ -amylase prepn. The sirup consists predominantly of oligosaccharides (the no. of glucose units approx. 6), has a pH of approx. 8.2, and contains about half as much reducing substance as ordinary caramel sirup. Caramel prepd. with this sirup contains less than 10% reducing substance and is of very low hygroscopicity. A scheme for starch hydrolysis to produce such sirup is given.  
M. Hosen

CH (2)



ALEKSANDROV, V.V., kandidat tekhnicheskikh nauk; AFANAS'YEVA, N.V.,  
nauchnyy sotrudnik; GRYUNKER, V.S., professor, nauchnyy sotrudnik.

Effect of methods of hydrolysis of starches on properties of syrup.  
Trudy VKNII no.9:49-72 '54. (MLRA 7:8)  
(Confectionery) (Pastry)

PLYATSKIY, V.M., kand. tekhn. nauk; ALEKSANDROV, V.V.

Die casting of engine cylinders made of aluminum alloys. Avt. prem.  
no.3:38-39 Mr '59. (MIRA 12:5)  
(Die casting) (Automobiles--Engines--Cylinders)

18.4000

S/117/60/000/003/003/004  
A004/A001

82243

AUTHORS: Aleksandrov, V. V., Danilov, A. N., Engineers

TITLE: Improving the Technology of Pressure Die Casting<sup>8</sup>

PERIODICAL: Mashinostroitel', 1960, No. 3, p. 31

TEXT: The pressing chamber of pressure die casting machines is one of the units which is subjected to highest thermal loads, since it is in contact with the molten metal during a considerably longer time than the gate system and the press-mold. Although press chambers are generally made of the alloyed steel grades 3X2B8 (3Kh2V8)<sup>8</sup> and 3X13 (3Kh13)<sup>8</sup> and heat treated up to a hardness of 60-62 RC, they comparatively quickly get out of order and their life does not amount to more than 30-40 pressing operations. In order to eliminate this deficiency the authors suggest a new design of pressing chamber which is made of two parts, a permanent housing of carbon steel or cast iron and an interchangeable bushing made of graphite.<sup>8</sup> Test specimens of these bushings were made from electrode remainders of electric arc furnaces. The durability of such graphite bushings exceed that of ordinary pressing chambers by 4-5 times. Moreover, the antifriction properties of graphite, which make it possible to do

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X

Improving the Technology of Pressure Die Casting

S/117/60/000/003/003/004  
A004/A001 82243

away with the lubrication of the inner chamber walls, and the fact that worn bushings can be changed within a short time, ensures an increased efficiency of the machine, particularly with the pressure die casting of high-melting alloys. Another important factor, determining the quality of castings, durability of individual machine units and operational efficiency, is the lubrication of press-molds. The lubricants used at present consist of expensive organic compounds (stearin, beeswax etc., costing between 10,000 and 60,000 rubles per ton) and graphite. Referring to the practice and data of foreign firms, the authors suggest to use liquid colorless cylinder oil with small graphite additions. This lubricant proved to be very efficient for the casting of aluminum alloys (pouring temperature = 640-730°C and press-mold temperature = 230-290°C). For the casting of thick-walled components, when the press-mold temperature comes up to 340°C, a heavier cylinder paste is used. The authors tested a number of lubricants during the casting of small-sized and medium aluminum alloy components and steel parts. The best results were obtained with the "Vapor" cylinder oil - OCT (GOST) 6411-52 having a flash point of 350°C, which possesses the necessary viscosity when applied to the press-mold. There are 3 figures.

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X

S/117/60/000/012/017/022  
A004/A001

AUTHORS: Aleksandrov, V. V., Kuratov, P. R.

TITLE: Press-Mold Parts of Cast Iron With Spheroidal Graphite

PERIODICAL: Mashinostroitel', 1960, No. 12, p. 37

TEXT: The authors point out that foreign firms have been using successfully cast iron with spheroidal graphite instead of high-alloyed steel for the manufacture of press-mold parts for die-casting operations. In order to investigate this process the authors produced a test lot of bars, 70 mm in diameter and 250 mm high, made of cast iron with spheroidal graphite with the following composition: 2.66% - C; 3.15% - Si; 0.21% - Mn; 0.02% - S; 0.026% - P; 0.27% - Ni; 0.15% - Mg. The charge was calculated on the base of the B4-40-10 (VCh-40-10) cast iron smelted in the "Ayaks" electric-arc furnace. At a temperature of 1,400°C magnesium was added to the molten cast iron in the form of a silicon-magnesium alloy containing 10% magnesium. The melt was poured into sand molds at 1,380°C. To obtain cast iron of the ferrite class, the cast bars were subjected to the following heat treatment: loading into the furnace preheated to 700°C, temperature increase up to 920-930°C, 3-4 hours holding, temperature reduction to 720-730°C, 4-5 hours holding,

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Press-Mold Parts of Cast Iron With Spheroidal Graphite

S/117/60/000/012/017/022  
A004/A001

further decrease in temperature to 600°C and cooling of the blanks in the air. After heat treatment the cast iron possessed the following mechanical properties: tensile strength limit 47.5 - 47.2 kg/cm<sup>2</sup>; relative elongation 18.8 - 16.0%; toughness 2.84 - 2.96 kgm/cm<sup>2</sup>; hardness HB 156-148. The microstructure of the magnesium-modified cast iron consists of the ferrite base and graphite of spheroidal shape. A test lot of foundry gate bushes made of this cast iron with spheroidal graphite was manufactured. These bushes, formerly made of the 3X2B8 (3Kh2V8) grade steel, had an inner diameter of 15-22 mm. Their working surface finish corresponded to  $\nabla 6 = \nabla 7$ . The bushes were placed in press-molds for the die casting on the "Polak 900" and "512" machines. The molds were filled with the Al10B (AL10V) aluminum alloy at temperatures of 580 - 600°C and the Al2 (AL2) alloy at temperatures of 650 - 680°C. The press-molds were lubricated with the "Vapor" cylinder oil (ГОСТ-GOST-6411-52). The test casts showed that press-mold parts of cast iron with spheroidal graphite can fully replace high-alloy steel parts. The castings were easily shaken from the mold and the bushes withstood approximately 15,000 castings. In comparison with press-mold parts of scarce high-alloyed steels the cast-iron parts are by 8-10 times cheaper. There are 2 figures.

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66572

~~14(1)~~ 5.5800

SOV/67-59-5-6/30

AUTHORS: Borok, M. T., Engineer, Aleksandrov, V. V.

TITLE: Automatic Gas Analyzer for the Continuous Determination of Small Concentrations of Nitrogen in Argon

PERIODICAL: Kislorod, 1959, Nr 5, pp 24 - 26 (USSR)

ABSTRACT: In the present paper, an automatic gas analyzer of the SF-4101 type for the above-mentioned determination is described which has been designed by the GSKB of the analiticheskoye priborostroyeniye AN SSSR (Construction of Analysis Apparatus of the AS USSR). As a feeler of the analyzer, a high-frequency discharge tube without electrodes was used; the total scheme of the gas analyzer is shown in figure 1. Special characteristics are: a drying filter for the separation of steam (on account of the disturbance by H-lines in the determination spectrum); the discharge tube has a diameter of 5 mm, discharge is stimulated at a pressure of 0.3 torr. For recording, a photo element could be used owing to the high luminescence of the discharge in  $N_2$ -Ar which considerably simplifies the apparatus. A regulating valve with a pressure gauge was installed for regulating and measuring the pressure (resistance manometer). The light fluxes from the discharge tube were

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Automatic Gas Analyzer for the Continuous Determination SOV/67-59-5-6/30  
of Small Concentrations of Nitrogen in Argon

shielded out by two light filters in such a way that only the principal bands of nitrogen and argon were let through, while attention had to be paid to the change in intensity when using the filters (Table). O<sub>2</sub> and CO<sub>2</sub> up to 0.3 and 1% did not disturb the recording of the spectra. For the automatic measurement of the relation of the two photo elements, a cathode replifier was used ( 6N1P tube) and an electronic device of the MSP-1-01 type. The calibration curve of the analyzer proved to be nonlinear, but nevertheless a minimum quantity of nitrogen in argon amounting to 0.02% could be determined. The possibility of an increased sensitivity of pressure measurement was also dealt with by A. M. Grigor'yev et al (Ref 5). There are 2 figures, 1 table, and 5 Soviet references.

✓

Card 2/2



28(4), 24(7)

AUTHORS: Aleksandrov, V. V., Borok, M. T.

S/032/60/026/02/037/057  
B010/3115

TITLE: A Gas Analyzer<sup>2d</sup> for the Automatic Measurement of Low Concentrations of Nitrogen in Argon by the Spectrophotometric Method

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 26, Nr 2, pp 214-217 (USSR)

ABSTRACT: An SF-4101<sup>2d</sup> type gas analyzer for the automatic determination of small amounts of nitrogen in argon was designed. Measurement is based on a comparison of the intensities of two beams of light, one characterizing the spectral lines of nitrogen, and the other those of argon. An electrodeless high-frequency discharge of the gas to be tested is produced in the transmitter. The dimension of the discharge tube was selected with utmost care. A tube with an inner diameter of about 5 mm was found to be the most appropriate, and a gas pressure of 0.2 to 0.4 torr was applied. The continuous measurement of the nitrogen concentration of argon is performed by the compensation method using an automatic comparison of the intensities of the above-mentioned beams of light by means of PS-11, UFS, and SZS-11 light filters (in dependence on the nitrogen concentration). The gas to be tested is dried prior to the deter-

Card 1/2

A Gas Analyzer for the Automatic Measurement of Low Concentrations of Nitrogen in Argon by the Spectrophotometric Method S/032/60/026/02/037/057 B010/B115

mination. A block diagram of the SF-4101 gas analyzer together with a description is given (Fig 4). The device contains an LT-2 pressure regulator, a UEM-239 amplifier, and an RD-09 reversible motor. The high-frequency voltage of the discharge tube (about 20 Mcps) is generated by a generator with a GU-29 valve. The ratio of the photoelectric currents generated by the two above-mentioned beams of light in two photocells is measured by means of a cathodic repeater (6N1F valve) and an electronic device of the type MSR. Calibration curves of the gas analyzer described, obtained in the SKB AP and NIFI LCU (Fig 5) are given. There are 5 figures and 4 Soviet references.

ASSOCIATION: Konstruktorskoye byuro analiticheskogo priborostroyeniya Akademii nauk SSSR  
(Bureau of Construction for the Design of Analytical Devices of the Academy of Sciences of the USSR)

Card 2/2

*Aleksandrov V.V.*

ALEKSANDROV, V.V.

Increasing the qualifications of communication office heads.  
Vest.sviazi. 18 no.1:22-23 Ja '58. (MIRA 11:1)

1.Nachal'nik Upravleniya rukovodyashchikh kadrov Ministerstva  
svyazi RSFSR.

(Telecommunication)

ALEKSANDROV, V. V.

The young technical specialists should receive greater recognition.  
Vest. svyazi 23 no.2:28-29 F '63. (MIRA 16:2)

1. Nachal'nik Upravleniya Rukovodyashchikh kadrov Ministerstva svyazi  
RSFSR.

(Telecommunication)

ALEKSANDROV, V. V., Candidate Tech Sci (diss) -- "Harmonic oscillations of foundations in an elastic suspended semispace". Khar'kov, 1959. 9 pp (Min Higher Educ Ukr SSR, Khar'kov Construction Engineering Inst), 150 copies (KL, No 26, 1959, 124)

ALEKSANDROV, V. V.

3

USSR .

2039. Barab, L. A., and Aleksandrov, V. V., General method of critical depth determination in channels of various form (in Russian); *Gidrotekh. i Melior.* no. 7, 68-69, July 1954. Assumed dimensionless numbers are introduced into general formula for critical depth and adapted to trapezoidal, circular, and other closed sections. E. Kolupaila, USA

20  
82

ALEKSANDROV, V.V.; KOLIFROV, D.K.; SKORIK, I.I.

Standardization of the pH scale. Trudy inst. Kom. stand.,  
mer i izm. prib. no.68:34-41 '63. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii  
im. D.I. Mendeleysva i Khar'kovskiy gosudarstvennyy universitet.

ALEKSANDROV, V.V.; VRUBLEVSKAYA, L.V.; KOLLEROV, D.K.; KUZNETSOVA, N.V.;  
SKORIK, I.L.

Standard buffer solutions and the determination of their  
pH in the temperature range of 0 to 95°C. Trudy inst.  
Kom. stand., mer i izm. prib. no.68:59-79 '63.

(MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii  
im. D.I. Mendeleyeva i Khar'kovskiy gosudarstvennyy universitet.



ALEKSANDROV, V.V.

Mathematical machines for handling technological processes. Pri-  
borostroenie no.2:11-14 F '56. (MLRA 9:8)  
(Electronic calculating machines)

Использование ЭВМ, В.В.

ALEKSANDROV, Y.V.

Use of electronic calculating machines for automation of chemical  
processes. Khim. prom. no.2:116-120 Mr '57. (MIRA 10:6)  
(Electronic calculating machines) (Chemical engineering)

ALEKSANDROV, V.V.  
p.4

PHASE I BOOK EXPLOITATION

SOV/4022

Akademiya nauk SSSR. Institut nauchnoy informatsii

Avtomatizatsiya proizvodstvennykh protsessov v chernoy i tsvetnoy metallurgii (Automation of Production Processes In Ferrous and Nonferrous Metallurgy) Moscow, 1959. 130 p. 2,000 copies printed.

Additional Sponsoring Agency: USSR. Gosudarstvennyy nauchno-tekhnicheskiy komitet.

Ed.: A. B. Katsman; Tech. Ed.: P. N. Gavrin.

**PURPOSE:** This book is intended for metallurgists working in metallurgical plants and in scientific research institutes dealing with the problems of automation of metallurgical production processes.

**COVERAGE:** In the book is reviewed the state of automation of metallurgical plants of the ferrous and nonferrous metals industry. The present levels of automation of blast furnace

Card 1/5

Automation of Production (Cont.)

SOV/4022

and open hearth furnace processes and of steel rolling in the Soviet Union and elsewhere are described. The automation of ore mining and dressing and of the metallurgical processes as well as of casting and pressworking in nonferrous metallurgy is outlined. The use of control computers for automation of manufacturing processes in U.S.A., Great Britain, USSR and other countries is shown. No personalities are mentioned. There are 126 references: 82 English, 41 Soviet, 2 German, and 1 French.

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