Kirpichnikov, I. V.

AUTHOR: KIRPICHNIKOV,I.V., OKOROKOV,V.V., SUKHORUCHKIN,S.I. PA - 2306

TITLE: Measurements of the Effective Number of the Fission Neutrons of Pu^{239} if the Energy of the Fissioning Neutrons lies within a Range of 7 to 30 eV. (Izmereniye effektivnogo chisla vtorichnykh neytronov Pu^{239} v oblasti energii pervichnykh neytronov ot 7 do 30 eV, Russian).

PERIODICAL: Atomnaia Energiia, 1957, Vol 2, Nr 3, pp 247 - 252 (U.S.S.R.)

Received: 4 / 1957 Reviewed: 5 / 1957

ABSTRACT: The authors measured the energy dependence of this effective number $\nu_{eff} = \sigma_f/\sigma_a$. Here ν denotes the average number of fast neutrons per fission, σ_f - the fission cross-section, σ_a - the absorption cross-section.

Experimental order: The measuring method has already been described in a former paper. Measurements were carried out by means of a neutron selector. A special scheme of a quartz-shock-generator was developed. An intense flashing up of gamma rays from a beryllium target (whereby the impinging of accelerated deuterons on the target is indicated) was registered by means of a scintillation counter with plastic scintillator. The momentum of the photomultiplier set the generator in operation after formation in the integral scheme. Measurement of the fission cross-section and of the flux of the slow neutrons is also discussed. The elaboration

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Measurement of the Effective Number of the Fission Neutrons of Pu^{239} if the Energy of the Fissioning Neutrons Lies within a Range of 7 to 30 eV.

of measuring results is then discussed.

Measuring results: The measured values of $\sigma_a\sqrt{E}$ and $\sigma_f\sqrt{E}$ are illustrated in form of diagrams. By comparing the results of the present paper with the values of σ_f/σ_a found by means of a fission chamber, it can be seen that for the resonances of Pu^{239} ν does not change much in relation to the thermal values. The results obtained here are compared with those of other authors by means of a table. The fission effect was measured specially for the range of from 13 to 250 eV. Most of the strong resonances of Pu^{239} have a marked fission width with the exception of the resonances in case of 42 and 44 eV which may possibly belong to the isotope Pu^{240}.

Conclusions: The radiation width Γ_γ is not strictly constant, but changes markedly from level to level, a fact which must further be investigated.

In consideration of self-screening of the resonances and of the contribution of the non-resonance-dependent term in the absorption- and fission cross-section it follows that the data of the present

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PA - 2306

Measurement of the Effective Number of the Fission Neutrons of Pu^{239} if the Energy of the Fissioning Neutrons lies within a Range of 7 to 30 eV.

paper do not agree with the results of other investigations concerning the determination of energy dependence of the effective number ν_{eff} of the Pu^{239}. (4 illustrations, 1 table).

ASSOCIATION: Not gieven.
PRESENTED BY:
SUBMITTED: 14.7.1956
AVAILABLE: Library of Congress.

Card 3/3

SOV/120-59-4-3/50

AUTHORS: Ignat'yev, K. G., Kirpichnikov, I. V., Sukhoruchkin, S. I.

TITLE: A Neutron Spectrometer Using a Polarized Cyclotron Beam

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 4, pp 25-31 (USSR)

ABSTRACT: A description is given of a 256-channel neutron analyzer. A cyclotron with a vertical deflection of the deuteron beam onto an internal target is used as the neutron source. This gives high density neutron pulses about 0.1 μsec long. The channel width can be 0.25, 1, 2, 4, 8, 16 and 32 μsec. The time interval required is set by a choice of one of the above channel widths and a delay made up of a combination of one of the following time intervals: 0, 16, 32, 64, 128, 256, 512, 1024, 2048, and 4096 μsec. The length of the working cycle T depends on the experimental conditions and may be one of the following: 512, 1024, 2048, 4096 or 8192 μsec. The best resolution obtained was 0.024 μsec/m. This corresponds to a flight path of 15 m. The corresponding upper limit for the energy at which the measurements are carried out is 100 eV. The total relative error in the determination of the flight time is 0.20%. A brief description is also given of the method whereby the deuteron beam is deflected on to the internal target. Fig 1 shows a schematic drawing of the

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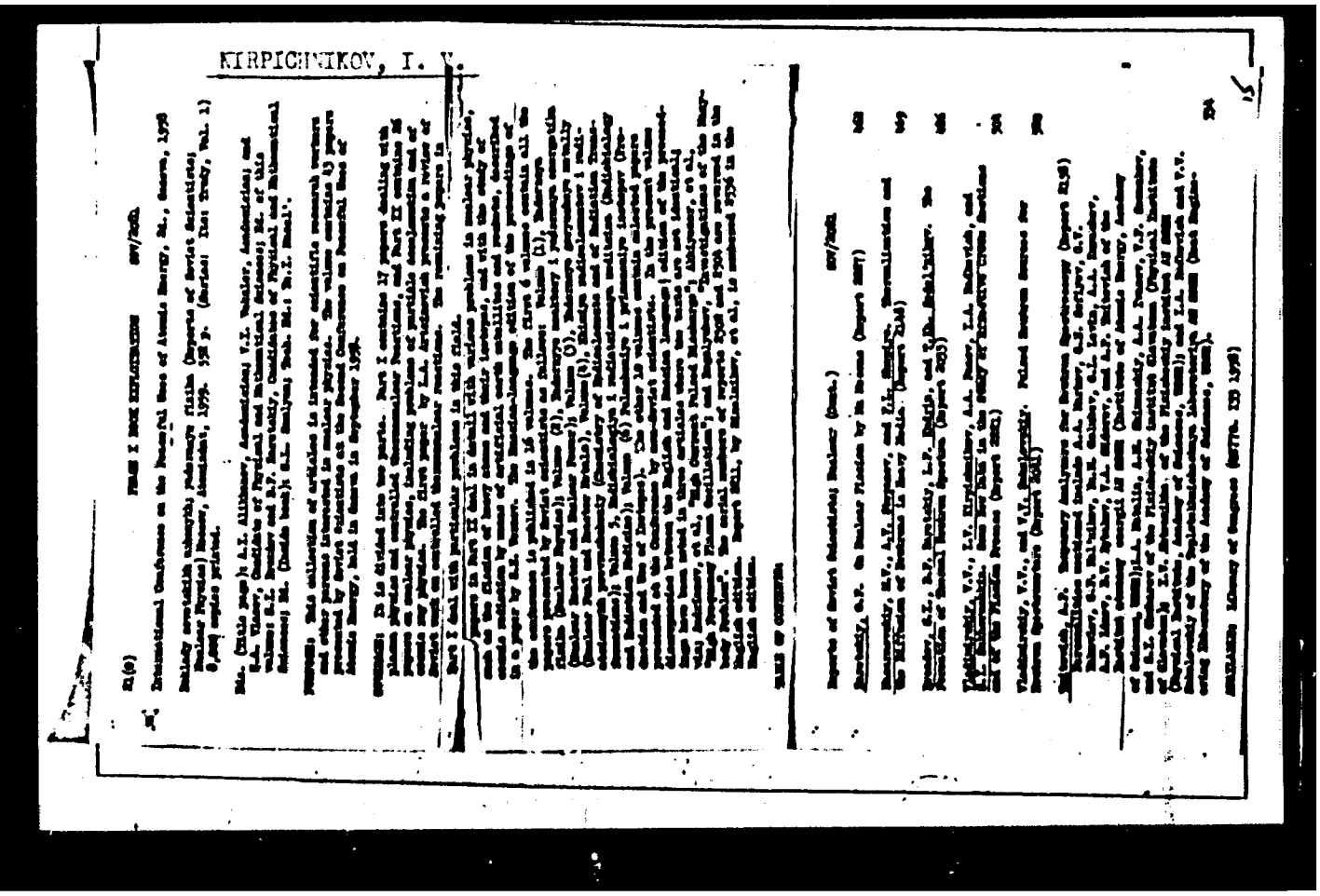
A Neutron Spectrometer Using a Polarized Cyclotron Beam

vertical deflection system. In Fig 1 1 is the deflecting plate, 2 is the cyclotron beam, 3 is the target, 4 is the absorber and 5 is the boron carbide screen. Fig 2 shows the circuit of the generator of the deflecting pulses and Fig 4 shows the form of a pulse of fast neutrons from the target. The upper curve corresponds to the case where the vertical deflection pulse is not applied and the lower curve corresponds to the case in which the vertical is applied. There are 7 figures, 1 table and 7 references, of which 4 are English and 3 are Soviet.

SUBMITTED: May 17, 1958.



KIRPICHNIKOV, I. V.

40759

S/120/62/000/004/040/047
E039/E420

AUTHORS: Veselov, M.A., Gol'din, L.L., Kirpichnikov, I.V., Lomkatsi, G.S., Sidorenko, Z.S., Sysoyev, Ye.A.

TITLE: Investigation of the magnetic field configuration in the X-blocks of the proton synchrotron

PERIODICAL: Pribory i tekhnika eksperimenta, no.4, 1962, 212-217

TEXT: The magnetic field configuration is measured in 14 compensating blocks at various levels of induction from 80 gauss up to 8000 gauss. Magnetic field gradients are measured with an accuracy of better than 0.1% and the displacement of the neutral point obtained with an accuracy of 0.05 to 0.07 mm. A plexiglass carriage is located on the magnet poles and can traverse the whole length of the block (1910 mm). This carriage contains three pairs of permalloy probes for measurements in low fields and three pairs of coils for the medium and large fields. The field characteristics are measured at 31 points along the 14 X-blocks. The distribution of the field and its gradient is obtained near the axis of symmetry for 5 values of induction (82, 106, 210, 2600 and 7500 Oe) and on 6 of the C-blocks at

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8400 Oe. These measurements are compared with similar measurements on C-blocks. It is shown that displacement of the neutral point depends on the residual field. Displacement also occurs in strong fields because of core saturation. The results are presented graphically and discussed in some detail. The coordinates of the pole pieces with respect to the geodetic markers are determined to an accuracy of 0.03 to 0.04 mm. There are 8 figures.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)

SUBMITTED: March 31, 1962

S/903/62/000/000/042/044
B102/B234

AUTHORS: Ignat'yev, K. G., Kirnichnikov, I. V., Kosodayeva, N. M., Sukhoruchkin, S. T.

TITLE: Investigation of the γ-rays from neutron resonance capture by heavy nuclei

SOURCE: Yadernyye reaktsii pri malykh i srednikh energiyakh; trudy Vtorogo Vsesoyuznogo Konferentsii, iyul' 1960 g. Ed. by A. S. Davydov and others. Moscow, Izd-vo AN SSSR, 1962, 551

TEXT: A brief communication is given on investigations of the γ-ray spectra and angular correlations in the case of neutron resonance capture by W, Pt, Xe, and Ag. The neutron energy was measured by the time-of-flight method with a multi-channel selector. The γ-rays were analysed with the help of scintillation spectrometers and a pair spectrometer. The spins of several resonance levels were determined by comparing the ground-state transition intensities and measuring the angular correlation of the cascade γ-rays: I = 1 for W^{183} with E_0 = 7.8 and 26 ev; for Pt^{195} with E_0 = 11.9, 19.6 and 68 ev, and for Xe^{129} with E_0 = 9.5 ev; I = 0 for E_0 = 102 ev of W^{183}. The

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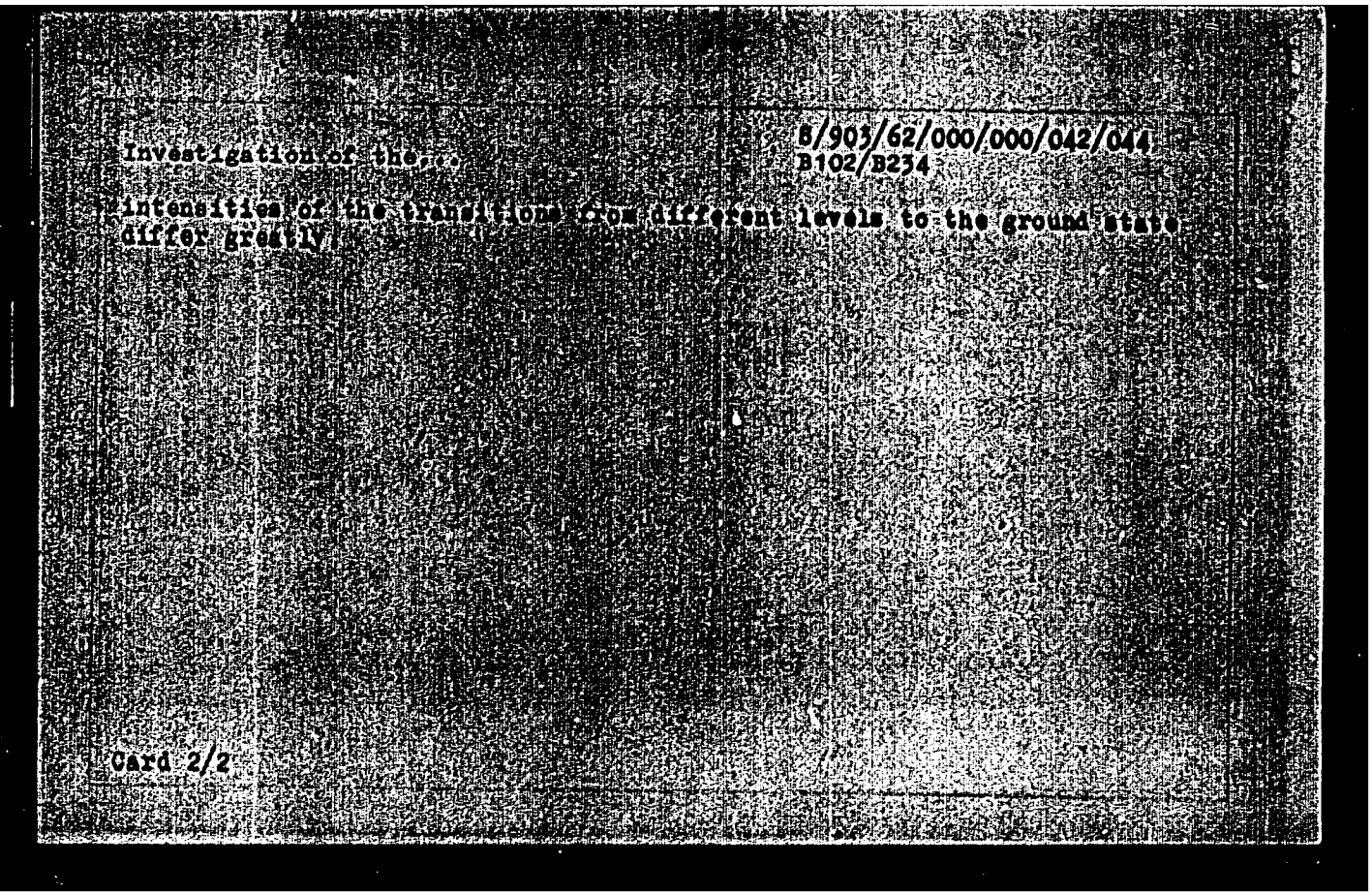

Investigation of the...

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B102/B234

intensities of the transitions from different levels to the ground state differ greatly.

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RATYNSKIY, V.; IGNAT'YEV, K.G.; KIRPICHNIKOV, I.V.; BELYAYEV, F.N.; SUKHORUCHKIN, S.I.

Gamma-ray spectra produced in resonance neutron capture. Zhur. eksp. i teor. fiz. 45 no.4:870-874 O '63. (MIRA 16:11)

1. Institut teoreticheskoy i eksperimental'noy fiziki.

IGNAT'YEV, K.G.; KIRPICHNIKOV, I.V.; SUKHORUCHKIN, S.I.

Spin dependence of the density of resonance levels. Zhur. eksp. i teor. fiz. 45 no.4:875-881 O '63. (MIRA 16:11)

1. Institut teoreticheskoy i eksperimental'noy fiziki.

ACCESSION NR: AP4015557 S/0089/64/016/002/0110/0119

AUTHOR: Ignat'yev, K. G.; Kirpichnikov, I. V.; Sukhoruchkin, S. I.

TITLE: Measurement of Eta and of partial cross sections of U sup 235 and Pu sup 239 isotopes for neutrons of resonant energies

SOURCE: Atomnaya energiya, v. 16, no. 2, 1964, 110-119

TOPIC TAGS: total cross section, partial cross section, U sup 235, Pu sup 239, radiation capture cross section, fission cross section, nuclear resonance

ABSTRACT: The authors investigated the energy dependence of partial cross sections (for fission and radiation capture) in a wide energy range, 0.03 to 20 ev for U^{235} and 5 to 100 ev for Pu^{239}, with a "blinking" cyclotron beam. The method of measurement is described and the results are given in tables and diagrams. Numerous resonances had been found. A detailed analysis of the results is given in other papers (see Atomnaya energiya, 1964, v. 16). The essential conclusions of the work are as follows: (a) there is a correlation of the

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ACCESSION NR: AP4015557

amplitude signs with the reduced resonance widths; (b) the fission width depends strongly on the spin. "The authors are grateful to V. V. Pavlov, V. V. Rotman, A. N. Soldatov, and A. D. Kharitonov for help with measurements, and to the members of the mathematical section of the Institute for Theoretical and Experimental Physics, S. P. Borovlev and L. I. Panov." Orig. art. has: 11 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 22Apr63 DATE ACQ: 12Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 005 OTHER: 012

Card 2/2

ACCESSION NR: AP4020326 S/0089/64/016/003/0211/0218

AUTHOR: Kirpichnikov, I. V.; Ignat'yev, K. G.; Sukhoruchkin, S. I.

TITLE: Interference effects in fission cross sections

SOURCE: Atomnaya energiya, v. 16, no. 3, 1964, 211-218

TOPIC TAGS: interference effect, fission cross section, U sup 235, Pu sup 239, spin resonance, plutonium, uranium

ABSTRACT: An interference analysis for a fission cross section of isotopes U^{235} and Pu^{239} with slow neutrons was conducted. Relative signs of amplitude of reduced widths and degree of interference for highly interfering levels are obtained. A correlation of amplitude signs is discovered. The number of effective open fission channels is found near unity for Pu^{239} and near two for U^{235}. Conclusions are made on the spins of a series of plutonium levels and relative spin resonances of U^{235}. The values of average fission level widths with different spins are obtained. "In conclusion, the authors are sincerely grateful to S. P. Borovlev and L. I. Panova for help in preparing measurement results." Orig. art has: 2 tables, 3 figures, 4 formulas.

Card 1/1

IGNAT'YEV, K.G.; KIRPICHNIKOV, I.V.; SOLDATOV, A.N.; SUKHORUCHKIN, S.I.; KHARITONOV, A.D.

Improvement of the neutron-velocity selector and measurement of the first resonances in copper and zinc. Prib. i tekh.eksp. 10 no.5:58-60 S-O '65.

(MIRA 19:1)

1. Institut eksperimental'noy i teoreticheskoy fiziki Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR, Moskva. Submitted Sept.20, 1964.

KIRPICHNIKOV, K.S.

KIRPICHENIKOV, K. S.

KIRPICHENIKOV, K. S. -- "Phenomena of Recovery and Recrystallization in Cold-Formed Semifinished Sheet Goods From Aluminum Alloys During Their Heat Treatment." Sub 5 Jun 52, Moscow Aviation Technological Inst. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Vechernaya Moskva, January December 1952

KIRPICHNIKOV, K.S.

PHASE I BOOK EXPLOITATION 841

Moscow. Aviatsionnyy tekhnologicheskiy institut

Metallovedeniye i tekhnologiya termicheskoy obrabotki (Physical Metallurgy and Technology of Heat Treatment) Moscow, Oborongiz, 1958. 179 p. (Series: Its: Trudy, vyp. 31) 3,200 copies printed.

Ed. (title page): Vishnyakov, D.Ya., Doctor of Technical Sciences, Professor; Ed. (inside book): Kunyavskaya, T.M.; Tech. Ed.: Rozhin, V.P.; Managing Ed.: Zaymovskaya, A.S., Engineer.

PURPOSE: This book is intended for production engineers, physical metallurgists, heat-treatment specialists, and other scientific and technical personnel, as well as for advanced students.

COVERAGE: The book is devoted to the study of properties of heat-resistant alloys, the effect of steel structure on wear resistance, phase transformations and recrystallization in alloys, and also the effect of the conditions under which alloys are heat-treated on the structure and properties of the alloys. For references and additional coverage, see Table of Contents.

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TABLE OF CONTENTS:

Physical Metallurgy and Technology of Heat Treatment 841

Kirpichnikov, K.S., Candidate of Technical Sciences, Docent. Rapid Annealing of Semifinished Articles Cold-formed from D16 and AV (AK5) Aluminum-Alloy Sheet

The author describes the results of applying new regimes of rapid annealing for heat-treated aluminum alloys. In addition, he outlines the principles of designing equipment for rapid annealing. 17

Vishnyakov, D.Ya.; Figel'man, M.A., Engineer; Trifonova, O.L., Engineer. Some Properties of EI659 Medium-Alloy Steel

The author studies the effect of the degree of plastic deformation and the rate of cooling on the properties of this steel, tested at various temperatures. This type of steel contains small to moderate amounts of chromium, nickel, tungsten, and vanadium. There are 4 references, all Soviet. 34

Vishnyakov, D.Ya.; Vinitskiy, A.G., Candidate of Technical Sciences. A Study of the Wear Resistance of Carbon Steels 43

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1.1.710 2408, 1045, 1416, 1454

23012
S/536/60/000/043/003/011
E021/E435

AUTHOR: Kirpichnikov, K.S., Candidate of Technical Sciences

TITLE: Rapid Annealing of Д16 (D16) and Д1 (D1) Alloys

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy. No.43. 1960. pp.38-47. Termicheskaya obrabotka i svoystva stali i legkikh splavov

TEXT: In the annealing of cold-worked sheet and other material of D16 and D1 (duralumin type) alloys, the recommended regime is first to heat to 450 - 500°C when recrystallization occurs. If, as a result of recrystallization, the material is fully softened, then holding further at this temperature will lead to an increase in strength caused by an increase in the concentration of the solid solution as the chemical compounds are dissolved. Samples of sheet 2 mm thick were held at 500°C. Fig.3 shows the tensile strength σ_b, kg/mm^2 (top curves) and elongation δ% (lower curves), against the time held at 500°C (in minutes). Recrystallization is complete after 7 minutes for D16 and 9 minutes for D1. After this, solution of the compound occurs and the strength increases. The approximate concentration of solid solution at various times was

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S/536/60/000/043/003/011
E021/E435

found in the following way: samples were homogenized at 280, 330, 360, 400, 450 and 500°C and the crystal parameters were measured. Curves of parameter against homogenization temperature were drawn. Recrystallization annealing was then carried out in a normal furnace at 500°C for 1 minute (regime Op1), 7 min (Op2), 9 min (Op9) and 12 min (Op12) and in a muffle furnace for 5 min (M5), 8 min (M8) and 10 min (M10). The samples from the first furnace were air cooled and those from the muffle furnace were water-cooled. The lattice parameters were then determined and, from the curves already drawn, the "temperatures of equilibrium concentration" corresponding to the lattice parameters were found. Plots are included of the lattice parameter against the temperature of equilibrium concentration (t_k) for the different regimes for both alloys. Cooling from the recrystallization temperature to t_k (about 350°C) must, obviously, be fast to prevent further increases in concentration of solid solution. From this temperature, slow cooling must be carried out. The influence of the rate of cooling from different temperatures of equilibrium concentration was also investigated.

Rapid Annealing ...

Samples of D16 and D1 were subjected to a recrystallization anneal and subsequently heated to 300, 350 and 400°C, cooling from these temperatures to 200°C in 10, 20 and 30 min. The measured mechanical properties are plotted in Fig.7 (D16) and Fig.8 (D1). The top curves give the tensile strengths and the lower curves the elongation. The left-hand curves are for cooling in 10 min, the middle curves in 20 min and the right-hand curves in 30 min. The best results are obtained by cooling from 350°C. Cooling from this temperature can be carried out at the highest rate. It was also of interest to determine the temperature of the end of the slow cooling. This is characterized by a decrease in the rate of the diffusion processes and was determined by constructing hardness curves in relation to annealing temperature. Fig.9 shows this for D16 alloy and Fig.10 for D1 alloy (curve 1, immediately after quenching; curve 2, after 20 days). The temperature required for the end of the slow cooling was 260°C in both cases. The whole cycle of operations (recrystallization anneal, fast cool and slow cool) can be carried out in 20 to 30 min. Engineers L.N.Volodin and T.A.Volodina participated in the experimental work.

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23013

S/536/60/000/043/004/011
E021/B435

1.1710 4016, 1454, 1413

AUTHOR: Kirpichnikov, K.S., Candidate of Technical Sciences

TITLE: Rapid Artificial Ageing of AK6 and AB (AV) (AK5) Alloys

PERIODICAL: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy. No.43. 1960. pp.48-62. Termicheskaya obrabotka i svoystva stali i legkikh splavov

TEXT: Experiments were carried out in order to try and reduce the time of ageing of the alloys AK6 and AK5. The composition of the AK6 alloy is: Al - 2.4% Cu - 0.7% Mg - 0.7% Mn - 1.0% Si; and that of the AK5 alloy is: Al - 0.6 to 0.9% Mg - 0.6 to 1.2% Si - 0.2 to 0.6% Cu - 0.15 to 0.35% Mn - 0.5% Fe. Immediately after quenching, samples of the AK6 alloy were given a short age for 0 to 30 min at 185°C, 0 to 20 min at 200°C, 0 to 20 min at 220°C or 0 to 5 min at 240°C. After this they were aged for 3, 6 and 12 hours at 155 ± 5°C. Fig.1 shows the hardness (Rockwell A and B) plotted against the time of ageing at 185°C. Curve 1 is for the sample aged at 185°C, curves 2, 3 and 4 for the samples with additional ages of 3, 6 and 12 hours at 155°C and curve 5 without the short age at 185°C. Similar curves are reproduced for the samples aged at 200°C. Good results are obtained after ageing at

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Rapid Artificial Ageing ...

185°C for 15 to 30 min and 155°C for 3 hours or more, or at 200°C for 15 to 20 min and 155°C for 3 hours or more. A short age at 220°C leads to a decrease in hardness. Experiments were also carried out on multistage ageing of AK6 alloy. Many regimes were tried and the optimum treatment was found to be to heat rapidly (40 min) to 200°C, slowly cool (60 min) to 150°C and hold at 150°C for one hour. Curve 1 of Fig.5 shows the changes in temperature (discontinuous line) and hardness (continuous line) with time during this treatment. Curve 2 shows the effect of holding at 150°C for 3 hours and slowly heating to 190°C. Similarly, in Fig.6, curve 1 refers to rapid heating to 190°C and slow cooling to 100°C and curve 2 refers to slow heating from 100 to 190°C. Similar experiments were carried out with alloy AK5. The optimum 2-stage heat treatment was found to be to hold at 200°C for 30 min, cool in water, and heat to 150°C for 2 hours. The optimum multi-stage ageing treatment was a rapid heat (40 min) to 190°C, a slow cool to 150°C, holding at 150°C for one hour. The multi-stage ageing treatments have the advantage over the 2-stage ageing treatments that they can be carried out in one furnace. The optimum 2-stage and multistage ageing treatments of AK6 and AK5

S/536/60/000/043/004/011
E021/E435

Rapid Artificial Ageing ...

alloys result in an increase in mechanical properties. This is especially marked in the case of the yield point which may increase by as much as 5 kg/mm^2. Fig.10 shows the mechanical properties of AK5 during ageing by rapid heating to 190°C, cooling to 150°C and holding for 8 hours. The corrosion properties of the alloys after the new ageing treatments were tested in 3% NaCl + 0.1% H_2O_2. The results showed that the new treatments gave properties which were in no way inferior to those after normal ageing. Some of the experiments were carried out by Li Tin Son, Aspirant of the Peking Aviation Institute in 1956 under the direction of the author. N.A.Petrov also participated in the experiments. There are 11 figures, 2 tables and 6 references: 2 Soviet-bloc and 4 non-Soviet-bloc. The three references to English language publications read as follows: H.K.Hardy, Journ.Ins.Metals,75,1954, part 9, 707; J.A.Nock, J.A.C.Wool, Iron Age, 159,1947, 5-57; G.Wasserman, Brit.Intelligence Objectives Sub. Cotee (Group 2) Publ. No. H.S.G., 03757, 1946.

Card 3/7

18.1210 2508

S/536/61/000/050/016/017
D217/D304

AUTHOR: Kirpichnikov, K.S., Candidate of Technical Sciences, Docent

TITLE: Ageing characteristics of aluminum alloys containing 5% Zn and 1-2% Mg

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 50, 1961, Voprosy metallovedeniya, 165-176

TEXT: The ageing of Al alloys containing Zn is characterized by some peculiarities which distinguish them from alloys, in which Zn is not the basic alloying element. The ageing of two Al alloys was investigated (1) containing 5% Zn and 1% Mg and (2) containing 5% Zn and 2% Mg. Engineers I.M. Semina and N.G. Romanova took part in the experimental survey. The above two alloys were prepared in an electric resistance furnace. Ingots, 190 x 740 x 1300 mm, were made by continuous casting at 685°C at a teeming rate of 63 mm/minute. These were homogenized at 460°C for 36 hours and rolled into sheet of 2.5 mm thickness. In order to study the ageing characteristics of the two alloys, kinetic ageing

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Ageing characteristics ...

curves were plotted at various temperatures. Specimens were cut from the sheet, heated at 450°C for 40 minutes and water quenched. Ageing was carried out in a drying cabinet. The major portion of the investigation was concerned with the initial stages of ageing (10-12 hours), and only in a few cases was more lengthy ageing studied. The latter investigation showed that natural ageing of the alloys proceeds very slowly. The optimum mechanical properties are attained after approximately 90 days; under conditions of long-term ageing, the optimum proof stress is attained after soaking for 100 hours at 100°C. It was found that Al alloys containing 5% Zn and 1-2% Mg exhibit a retardation in ageing. This phenomenon is observed when the alloys are subjected to artificial ageing at sufficiently high temperatures immediately after quenching, but not when they are subjected to ageing several hours after quenching, or when they are heated slowly. Mg causes the Spinel point in the thermal equilibrium diagram to be raised. For alloy (1), the Spinel point occurs at a temperature close to 140°C, and for alloy (2), at close to 200°C. In the first stage of ageing, the rate of the process is due essentially to the degree of supersaturation of the solid solution

30932

18.1210 2508 S/536/61/000/050/017/017
D217/D304

AUTHOR: Kirpichnikov, K.S., Candidate of Technical Sciences, Docent

TITLE: Accelerated ageing procedures for aluminum alloys containing 5% Zn and 1-2% Mg

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 50, 1961, Voprosy metallovedeniya, 177-185

TEXT: Natural ageing of Al alloys containing 5% Zn and 1-2% Mg takes 80-90 days. In order to find the optimum procedures for artificial ageing, two-stage and multi-stage processes were investigated. The hardness and mechanical properties of the alloys were studied, hardness tests being carried out immediately, and mechanical properties being tested a few hours after the appropriate heat treatment. Engineers I.M. Semina and N.G. Romanova participated in the experimental procedure. The mechanical properties were tested on specimens which had been soaked at artificial ageing temperatures for 5-6 hours, since after short-term soaking, the storage of alloys at room temperature exerts a strong

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30932.
S/536/61/000/050/017/017
D217/D304

Accelerated ageing procedures ...

influence on their properties. Two alloys were studied, one containing 5% Zn and 1% Mg (alloy 1) and the other, containing 5% Zn and 2% Mg (alloy 2). The following procedures were chosen for ageing: (1) ageing at low temperatures (up to 100°C) + ageing at high temperatures (150-160°C) and (2) ageing at high temperatures (150-160°C) + ageing at low temperatures (up to 100°C). The specimens were rapidly heated to the ageing temperatures. Earlier findings were confirmed, namely that the optimum long-term artificial ageing procedure consists in ageing at 100°C for 100 hours. This, however, can be substituted by rapid ageing procedures without noticeable deterioration in mechanical properties and corrosion resistance. The following procedures are recommended for the above two alloys: (a) a two-stage procedure, consisting in soaking at 100°C for 4 hours, followed by heating to 150°C and soaking for 7-9 hours; (b) a multi-stage procedure in which the temperature is raised in steps, reaching 160°C within 3-4 hours, and soaking at 160°C for 7-9 hours. When artificial ageing is used, the alloys should not be heated rapidly, as slow heating to the ageing temperatures improves

Card 2/3

KIRPICHNIKOV, K.S., kand.tekhn.nauk, dotsent

Artificial aging of aluminum alloys containing 5% Zn and 1-2 % Mg. Trudy MATI no.50:177-185 '61. (MIRA 14:10)
(Aluminum alloys--Hardening)

ACC NR: AT6036424 (A) SOURCE CODE: UR/2536/66/000/066/0147/0156

AUTHOR: Kirpichnikov, K. S. (Candidate of technical sciences); Kulakov, V. I. (Engineer); Shchekina, M. T. (Engineer)

ORG: none

TITLE: The effect of microalloying with refractory elements on the structure and properties of aluminum-alloy sheets containing 5% Zn and 2% Mg

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966, Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 147-156

TOPIC TAGS: alloy mechanical property, microalloying, aluminum zinc magnesium alloy, zirconium containing alloy, titanium containing alloy, beryllium containing alloy, chromium containing alloy, manganese containing alloy

ABSTRACT: A series of Al-Zn-Mg alloy ingots microalloyed with various amounts of zirconium, titanium, beryllium, chromium and manganese were homogenized at 450—470C for 12 hr and extruded into slabs (100 x 8 mm) which were rolled into sheets 1 and 3 mm thick, Sheet specimens 30 mm wide and 180 mm long cut along the direction of rolling were solution annealed at 430—435C, water quenched, and then aged. The optimal aging conditions giving the highest yield strength with sufficient elongation and high corrosion resistance was found to be 100C for 6 hr + 180 C for 4 hr. The

Card 1/2 UDC: 669.017:669.71

ACC NR: AT6036424

initial alloy after this aging had a tensile strength of 40.5 kg/mm^2, a yield strength of 37.0 kg/mm^2, and an elongation of 17%. The tests showed that homogenization had little or no effect on the mechanical properties of Al-Zn-Mg alloys. Small quantities of refractory elements added to the initial alloy had a small but noticeable effect on the mechanical properties but greatly improved the corrosion resistance, especially zirconium and zirconium combined with titanium. The mechanical properties of alloys microalloyed with Zr or Zr + Ti were: tensile strength 45.2 and 39.5 kg/mm^2, yield strength 39.0 and 35.8 kg/mm^2, and elongation 14 and 17.2%, respectively. The initial Al-Zn-Mg alloy had a very low resistance to stress corrosion when naturally aged (service life 6 days) and low corrosion resistance when artificially aged (service life from 42 to 76 days). In the majority of cases, microalloying increased the service life up to 200 days. The beneficial effect of refractory metals on corrosion resistance increased with higher alloying. The effect of microalloying on the temperature and kinetics of recrystallization was insignificant. In the initial Al-Zn-Mg alloy the recrystallization was completed during heating to about 320C. In alloys containing zirconium, the recrystallization began at 310C and was not complete at 500C. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 003/ ATD PRESS: 5107

Card 2/2

ACC NR AT6036425 (N) SOURCE CODE: UR/2536/66/000/066/0157/0165

AUTHOR: Kirpichnikov, K. S. (Candidate of technical sciences); Kulakov, V. I. (Engineer)

ORG: none

TITLE: Effect of adding minute amounts of refractory elements on the structure and properties of ingots of aluminum alloy containing 5% Zn and 2% Mg

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 66, 1966. Struktura i svoystva aviatsionnykh staley i splavov (Structure and properties of aircraft steels and alloys), 157-165

TOPIC TAGS: zinc containing alloy, magnesium containing alloy, aluminum base alloy, refractory metal, metal grain structure, metal property/A00 aluminum

ABSTRACT: 25 ingots of A00 aluminum combined with 5% pure Zn and 2% pure Mg and minute amounts of various refractory elements (0.005-0.1% Zr, 0.005-0.1% Ti, 0.005-0.1% Be, 0.005-0.050% Cr, 0.005-0.050% Mn) were subjected to microstructural analysis and mechanical tests. Part of the ingots was homogenized in a furnace with forced air circulation at 450-470°C. It was established that all these elements, even if added in minute amounts, markedly

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influence the structure and properties of the ingot. Zr in amounts of up to 0.05 at.% increases the size of the macrograin, reduces the size of the dendritic cell, slightly enhances the hardness of the ingot and microhardness of the solid solution in homogenized state, and reduces homogenization time. Ti, like Zr, also reduces the dimensions of the dendritic cell, but unlike Zr, it has an opposite effect on macrograin size, hardness, microhardness of the solid solution and homogenization time. Be sharply reduces the intracrystalline segregation and homogenization time of the ingot. The effect of Be in many cases coincides with the effect of Zr and is opposite to the effect of Ti. Thus, e.g. Ti reduces the hardness of the Al-Zn-Mg alloy in cast state by 4-5 H_B units, whereas Be increases hardness by 3-5 units and Zr also increases it, though to a less significant extent (Fig. 1). This may be to some extent attributable to the fact that Zr and Be have metallic radii which sharply differ from the metallic radius of Ti, whereas the metallic radius of Ti is similar to that of Al. In the ingots to which more than one refractory element was added, the observed effects were diluted if not neutralized. Orig. art. has: 5 figures, 2 tables.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722710020-0"

ACC NR: AT6036425

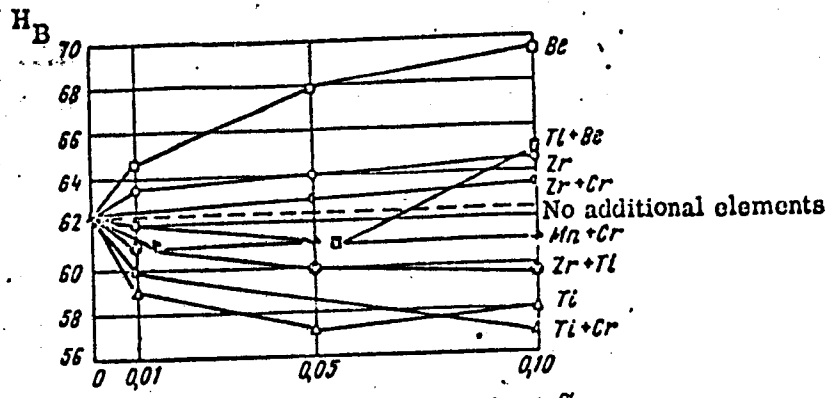

Fig. 1. Mean hardness of the Al-Zn-Mg alloy in cast state as a function of its content of additional elements

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 003

Card 3/3

KIRPICHNIKOV, L.A.

KIRPICHNIKOV, L.A., inzhener; KHARIF, M.I., inzhener.

Projected norms for artificial illumination of sea ports. Svetotekhnika 3 no.10:26-28 O '57. (MIRA 10:10)

1. Chernomorproyekt.
(Harbors) (Lighting)

KIRPICHNIKOV, L. A.

SERGEYEV, A.S., kandidat tekhnicheskikh nauk; KIRPICHNIKOV, L.A., inzhener; LITVAK, L.V., kandidat tekhnicheskikh nauk.

Placement of condensers in industrial plant circuits to increase the power factor. Prom.energ. 12 no.6:21-24 Je '57. (MIRA 10:7)
(Electric circuits)

KIRPICHNIKOV, L.A., inshener; KHARIF, M.I., inshener.

Characteristic indices for systems supplying electric power to sea ports and ship repair plants. Prom. energ. 12 no.7:15-19 Jl '57. (MLRA 10:8)
(Electric power)

KIRPICHNIKOV, L.

KIRPICHNIKOV, L.; KHARIF, M.

Electric cable feeders columns in harbors. Mor.flot 17 no.10:15-16 O '57. (MIRA 10:12)

1.Zamestitel' nachal'nika otdela Chernomoproyekta (for Kirpichnikov).
2.Starshiy inzhener otdela Chernomorproyekta (for Kharif)
(Harbors--Equipment and supplies)
(Electric cables)

KIRPICHNIKOV, L.A., inzh.; KHARIF, M.I., inzh.

New control circuit for outside lighting of industrial enterprises.
Svetotekhnika 4 no. 8:21-22 Ag '58. (MIRA 11:7)

1. Chernomorgrayekt.
(Factories--Lighting)

SOV/94-58-8-10/22

AUTHORS: Kirpichnikov, L. A., Engineer and Kharif, M. I., Engineer

TITLE: ~~An Electric Power Supply~~ System for Gantry Cranes in Ports (Sistema elektrosnabzheniya portal'nykh kranov v portakh)

PERIODICAL: Promyshlennaya Energetika, 1958, Nr 8, pp 25-27 (USSR)

ABSTRACT: Existing methods of electricity supply for cranes and other electrical equipment in ports are described. Supply pillars and flexible cables are commonly used and the sub-stations are at least 120 metres from the load so that very heavy cables are required. With the object of improving electricity supply systems in ports the authors, together with Engineer A. F. Zhuravlev, developed a system of electricity supply to gantry cranes and other power consumers on wharves which is based on the following principles: transformers of up to 560 kVA are installed directly on the wharves; cable lines laid in line with the wharves are replaced by bare busbars in a channel. The transformers are installed in special chambers below the level of the wharf and between railway tracks. The transformer chambers are naturally ventilated. If power consumption on the wharves is heavy transformers are

Card 1/2

An Electric Power Supply System for Gantry Cranes in Ports

installed every 150 metres. The sub-stations supplying the transformers are relatively few and far between and contain the protective and measuring equipment. The transformers are fused on the high voltage side and have an overload relay on the low voltage side. The transformers are connected to the busbars through three-pole isolating switches. Diagrammatic views of the power supply arrangements in wharves are given in Figs.1 and 2. Technical and economic calculations were made to compare this system of electricity supply with the usual one: the economy of capital was 30%, the consumption of non-ferrous metal was 2.2 times less, the power consumption 15% less, and the operating costs 21% less.
There are two figures.

ASSOCIATION: Chernomorproyekt

Card 2/2

KIRPICHNIKOV, L.A., insh.; KHARIF, M.I., insh.

Floodlight illumination part facilities. Svetotekhnika 6 no.1:25-28 Ja '60. (MIRA 13:5)

1. "Chernomorproyekt," Odessa.
(Harbors--Lighting)

KIRPICHNIKOV, Leonid Aleksandrovich; KHARIF, Moisey Izraylevich; SVIRSKIY, V.P., inzh., retsenzent; KORESTYNSKIY, N.D., inzh., retsenzent; KORESTYNSKIY, N.D., inzh., retsenzent; YAROSHENKO, V.I., inzh., inzh., retsenzent; BOGACHENKO, V.Ye., inzh., nauchnyy red.; LAPINA, Z.D., red. izd-va; SARAYEV, B.A., tekhn. red.

[Automatic control of transshipment machinery and the electric power supply network in sea ports] Avtomatizatsiia peregruzochnykh mashin i elektricheskikh setei v morskikh portakh. Moskva, Izd-vo "Morskoi transport," 1961. 147 p. (MIRA 15:3)
(Cargo handling--Equipment and supplies)
(Electric power distribution) (Automatic control)

KIRPICHNIKOV, L.A.; KHARIF, M.I.

Automation of 6 to 10 kv. distribution networks. Prom.energ. 16 no.6:19-23 Je '61. (MIRA 15:1)
(Harbors) (Electric substations) (Automatic control)

KIRPICHNIKOV, L.A., inzh.; KHARIF, M.I., inzh.

Experience in the use of bus conductors in electric power distribution networks of sea horbor pears. Prom. energ. 18 no.6:8-11 Je '63. (MIRA 16:7)

(Electric power distribution)
(Harbors—Electric equipment)

KIRPICHNIKOV, L.; KHARIF, M.

Design of electric networks for harbor piers. Mor. flot 23 no.3: 17-19 Mr '63. (MIRA 16:3)

1. Nachal'nik otdela Chernomorniiproyekta (for Kirpichnikov).
(Harbors) (Electric networks)

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(Bibliography--Grossgeim, Aleksandr Al'fonsovich, 1888-1948)
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2. Akademiya nauk SSSR. Botanicheskiy institut.
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for this work the authors were awarded the prèze imeni V. L. Komarov. BY Acad. Sci. USSR Priroda, 1958, No. 2, 113-114

1957

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(Cudweed)

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What is Helichrysum lavandufolium ("lavandulaefolium") Auct.?
Bot.mat.Gerb. 19:356-357 '59. (MIRA 12:8)
(Helichrysum)

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Sergei Vasil'evich IUzepchuk; biographical data and a brief analysis
Bot. zhur. 44 no.7:1028-1040 Jl '59. (MIRA 12:12)

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A survey of species of the genus Helichrysum Mill. corr. pers. occurring in the U.S.S.R. Bot.mat.Gerb. 20:314-336 '60. (MIRA 13:7)

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(Soil mechanics)

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IA.T. Remizov. Prof.-tekh. obr. 15 no.4:3 of cover Ap '58.
(Remizov, IAkov Terent'evich, d. 1958) (MIRA 11:5)

KIRPICHNIKOV, P.

Most important problems in the improvement of vocational and technical education in the Russian federation. Prof.-tekh.obr. 17 no.2:1-5 F '60. (MIRA 13:6)

1. Nachal'nik Glavnogo upravleniya professional'no-tekhnicheskogo obrazovaniya pri Sovete Ministrov RSFSR.
(Technical education)

KIRPICHNIKOV, P.

Our tasks in the new school year. Prof [illegible] 18 s.10-4.
7 O '57. [illegible]

1. Nachal'nik Glavnogo upravleniya prof [illegible]-tekhnicheskogo obrazovaniya pri Sovete Ministrov RSFSR.
(Vocational education)

S/138/60/000/010/008/008
A051/A029

AUTHOR: Kirpichnikov, P.A.

TITLE: Means for Improving the Organization of Synthetic Rubber Plants (A Discussion)

PERIODICAL: Kauchuk i Rezina, 1960, No. 10, pp 46-50

TEXT: The author lists a number of measures directed at improving the synthetic rubber industry and problems to be solved. In many synthetic rubber plants smaller shops have been amalgamated, the number of laboratories and designing offices increased. These steps are regarded as initial ones leading to further moves in this connection. Major faults of the existing structure in plant administration are exaggerated subdivision of the lower worker units and inefficient employment of the huge force of technicians and engineers. Sometimes there are as many as 20 engineers and technicians to 100 workers in each plant. The author suggests reorganization of the synthetic rubber plants in the following manner: 1) Enlarging the existing plants to the extent of those producing a large variety of elastomers and other polymer materials, since their production is based on similar methods. Fusion of the Yerevan' synthetic rubber plant with that of the "Polivinilatsetat" is recommended since they have their source of raw material in common, and also to affiliate the

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alcohol-manufacturing plant nearby to them. This would simplify administration problems. The production of polystyrene is suggested for the Voronezh synthetic rubber plant. 2) Enlarging the already existing shops in the plants to include complete technological cycles. As an example it is suggested combining the alcohol, catalyst and contact shops into one. 3) Comining the work of the repair and mechanical shops into one, liberating the engineering and technical staff from these tasks. This would accelerate the modernization and automation of equipment and the production of new non-standard machinery directly in the plants. 4) Simplifying the quality check of semi-finished products and technological processes by allotting these functions to the machinists instead of laboratory workers. Eliminating the double work of raw material checkers, already performed by suppliers. These measures would improve production and liberate space for research and designing. The author opposes the transfer of research and experimental laboratories to the universities and their branches from the premises of the plants as being another link-forming cause between science and industry, instead they should have direct access to each other. It is suggested called upon scientists from the various institutes of the AS USSR located close to the plants for help in solving

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numerous technological problems. The need for large scientific research laboratories for solving greater problems is not renounced. For example, the question of the synthesis of cis-1,4-butadiene rubber, ethylene-proplylene rubber and rubbers for special use would be dealt with at the institutes. The administration of the plants should be in the hands of qualified chemists with experience in research and sufficient knowledge of the technology. This would facilitate the introduction of new techniques and elastomers, synthetic materials and new uses of the latter. The administration of the plant is recommended in the following manner: The main director is responsible for all the activity of the plant, the technical and commercial directors take over internal affairs, allowing the main director more time for the general development and improvement of the technical and economic achievement of the plant. The plant's institute (the main research laboratory) would be under direct supervision of the main director. A technological group in the research laboratory would be responsible for registering facts for organizing further scientific research. The plant's institute would also serve as a school for training personnel. The technical director would be responsible for operations through dispatchers and the heads of production would be responsible for introducing techniques. The

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technical checking department should answer for control of quality and introducing new applications for the products. The commercial director is responsible for all the financing and business administration of the plant, including supplies and advertizing, especially of new products. The heads of departments must insure fulfillment of production quotas and plans, the introduction of new techniques and carrying out of scientific research. Fig.2 represents a diagram of the production administration of an enlarged shop. Qualified personnel should be in charge of operations and research engineers in charge of improving technology, chemical control of processes, etc. Regarding the designing of the plant, the head engineer should also be a research worker. It is further recommended that regional and project institutes be combined into scientific centers of chemical techniques. Finally it is pointed out that personnel in responsible positions without graduate qualifications should be given the opportunity to complete their studies. There are 2 diagrams.

ASSOCIATION: Kazanskiy khimiko-tekhnologicheskiy institut im. S.M. Kirova (Kazan' Chemical Engineering Institute im. S.M. Kirov).

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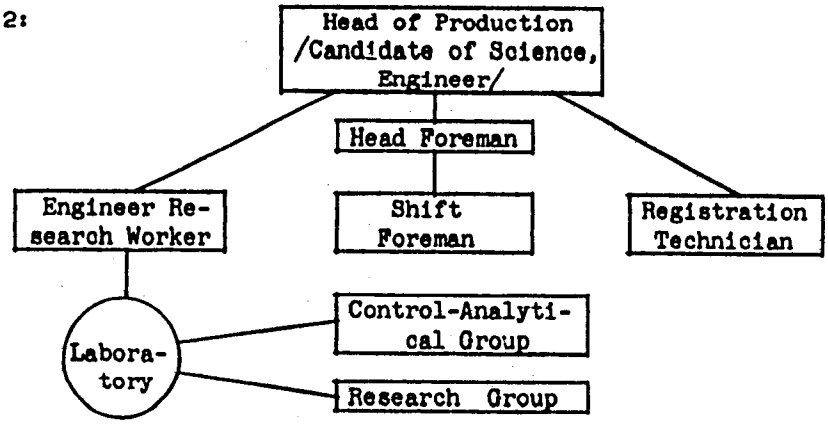
Figure 2:



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Kirpichnikov, P. A.

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S/019/61/000/019/043/091
A154/A126

AUTHORS: Mikhaylov, N. V., Tokareva, L. G., Terekhova, O. M., Fetisov, B. V., Buravchenko, K. K., Kirpichnikov, P. A.

TITLE: A method for preparing fiber-forming polyethyleneterephthalate

PERIODICAL: Byulleten' izobreteniy, no. 19, 1961, 40

TEXT: Class 29b, 1/60. No. 141584 (636599/23) of February 8, 1961). A method for preparing fiber-forming polyethyleneterephthalate by polycondensation of dimethylterephthalate and ethylene glycol, distinguished by the fact that, in order to increase the resistance of both polymer and fiber to heat, air and water, the polycondensation is carried out in the presence of alkyl phosphites in amounts up to 0,1% of the weight of the dimethylterephthalate used.

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KIRPICHNIKOV, P.A.; KUZ'MINSKIY, A.S.; POPOVA, L.M.; ZPIRIDONOVA, V.N.

Alkyl aryl esters of pyrocatecholphosphorous acid, new stabilizers of polymers. Report No.1: Synthesis of alkyl aryl esters of pyrocatecholphosphorous acid. Trudy KKHTI no.30:47-51 '62. (MIRA 16:10)

KIRPICHNIKOV, P.A.; KRASIL'NIKOVA, Ye.A.; SARATOV, I.Ye.

Some unsaturated esters of phosphorous acid. Trudy KKHTI no.30: 52-57 '62. (MIRA 16:10)

KADYROVA, V.Kh.; KIRPICHNIKOV, P.A.; TOKAREVA, L.G.

Synthesis of organophosphorus stabilizers of polymers. Trudy KKHTI no.30:58-62 '62. (MIRA 16:10)

KIRPICHNIKOV, P.A.; KORNEY, I.V.

Preparation of latexes by copolymerization of vinylidene chloride with butadiene and 2-methyl-5-vinylpyridine at low temperature, and some of their properties. Trudy KKHTI no.30:174-177 '62. (MIRA 16:10)

S/019/62/000/017/021/054
A154/A126

AUTHORS: Popova, Z.V., Yanovskiy, D.M., Kirpichnikov, P.A., Kapustina, A.S.

TITLE: A method of stabilizing halide-containing high-molecular compounds

PERIODICAL: Byulleten' izobreteniy, no. 17, 1962, 34

TEXT: Class 39b, 22_{06}. No. 149877 (746940/23-4 of September 30, 1961). This method of stabilizing halide-containing high-molecular compounds uses epoxy compounds as stabilizer. The method is distinguished by the fact that, to improve the quality of the final product, epoxided esters of a phosphonic acid (e.g., 1.2-epoxy-2-propylophosphinic acid) or other mixtures of these esters with other types of stabilizers are used as stabilizer.

[Abstracter's note: Complete translation]

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MUKMENEVA, N.A.; KIRPICHNIKOV, P.A.; PUDOVIK, A.N.

Polyphosphites. Part 3: Interaction of pyrocatesholphosphorous chloroanhydride with dioxy compounds. Zhur.ob.khim. 32 no.7:2193-2196 Jl '62. (MIRA 15:7)

1. Kazanskiy khimiko-tekhnologicheskiy institut imeni S.M.Kirova.
(Phosphorous acid) (Pyrocateshol) (Diphosphites)

TOKAREVA, L.G.; MIKHAYLOV, N.V.; ROZOVA, N.N.; KIRPICHNIKOV, P.A.

Lightfastness of polypropylene and fiber based on it. Khim. volok. no.3:23-25 '62. (MIRA 16:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.
(Propene) (Textile fibers, Synthetic) (Photochemistry)

39849
S/190/62/004/008/008/016
B101/B180

5.3833

AUTHORS: Mikhaylov, N. V., Tokareva, L. G., Buravchenko, K. K., Terekhova, G. M., Kirpichnikov, P. A.

TITLE: Stabilization of polyethylene terephthalate melts

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 8, 1962, 1186-1192

TEXT: In this fifth report on the ageing of synthetic fibers, the authors studied the thermooxidative decomposition of polyethylene terephthalate (PET) (initial intrinsic viscosity $[\eta]$ = 0.245; after reprecipitation $[\eta]$ = 0.256) at 170 - 220°C (methods see Kolloidn. zh., 16, 576, 1956) and their inhibition by esters of phosphorous acid. Results: (1) Heating to 220°C in N_2 shows no change in $[\eta]$. When heated in air, $[\eta]$ decreased more slowly in PET with reprecipitation refining than without. It is therefore assumed that thermooxidative processes occur with the formation of COH and COOH groups and destruction of the ester bond. The PET fiber Lavsan behaved similarly: initial breaking

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