

DOROSH, T.P.; GALUSHKO, V.P.

Study of the cathodic reduction of some slightly soluble
compounds of silver. Part 1: Microscopic examination.

Ukr.khim.zhur. 27 no.5:607-612 '61. (MIRA 14:9)

1. Dnepropetrovskiy gosudarstvennyy universitet.
(Silver compounds)
(Reduction, Electrolytic)

DOROSH, T.P.; GALUSHKO, V.P.

Cathodic reduction of some slightly soluble silver compounds.
Part 2. Polarization measurements. Ukr. khim. zhur. 28 no.1:
66-72 '62. (MIRA 16:8)

1. Dnepropetrovskiy gosudarstvennyy universitet im. 300-
letiya vosseyedineniya Ukrainy s Rossiyey i Dnepropetrovskiy
meditsinskiy institut.

ACCESSION NR: AT4030812

3/0000/63/000/000/0433/0437

AUTHOR: Galushko, V. P.; Dorosh, T. P.

TITLE: On the role of surface phenomena in the electro-chemical production of superfine metal powders

SOURCE: AN UkrSSR. Institut metallokeramiki i spetsial'nykh splavov. Poverkhnostnyye yavleniya v rasplavakh i protsessakh poroshkovoy metallurgii (surface phenomena in liquid metals and processes in powder metallurgy). Kiev, Izd-vo AN UkrSSR, 1963, 433-437

TOPIC TAGS: surface phenomenon, superfine metal powder, surface tension, surface active substance, electrolysis, cathode reduction, particle size

ABSTRACT: The authors stated that in the cathode reduction of low solubility compounds, because of the insignificant concentration of metal ions in the solution and the sharp shift of the electropotentials to the negative, a ratio of velocities is created in the nucleus formation and growth of the crystals which is quite suitable for forming superfine metal powders. The less solubility of the reduced substance and the greater the velocity of reduction (i.e., the more the separation of

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ACCESSION NR: AT4030812

the metal occurs in more irreversible conditions), the higher the particle size of the obtained powders. Storing of metal powder produced by cathode reduction of low solubility compounds of large particle size and, at the same time, free of oxides and organic substances, it is possible only in a vacuum or in an atmosphere of inert gas. To protect it from coagulating and from oxidation in the air, it is necessary to introduce surface active substances into the electrolyzers. Low solubility silver compounds are the most suitable objects for studying the surface phenomena in the formation and recrystallization process.

ASSOCIATION: Dnepropetrovskiy gosudarstvennyy universitet (Dnepropetrovsk State University)

SUBMITTED: 23Nov63

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ENCL: 00

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NO REF SOV: 009

OTHER: 000

Card 2/2

DOROSH, V.M.

Determination of small amounts of niobium in ores containing titanium, tungsten, molybdenum, and chromium. Zhur.anal.khim. 16 no.2:250-252 Mr-Apr '61. (MIRA 14:5)

1. Irkutsk Scientific-Research Institute of Rare Metals.
(Niobium—Analysis)

DOROSH, V.M.

Photometric determination of small amounts of tantalum by means of
rhodamines. Zhur.anal.khim. 18 no.8:961-963 Ag '63. (MIRA 16:12)

1. Karaganda Metallurgical Works.

RADCHENKO, V.D.; kand. tekhn. nauk; FARAFONOV, A.V., inzh.; DOROSH, V.P., inzh.

Modernized rapid-action switch-off for d.c. trains. Elek. i
tepl. tiaga 7 no.9:19-21 S '63. (MIRA 16:10)

~~ДОРОШAEV, M.N.~~

DOROSHAEV, M.N.

Dorosh¹ev and N. A. Gritseniuk are co-authors of an article "Twenty-Five Years of Mongolian Veterinary Science".
SO: Veterinariya; Vol. 27; No. 2; 4-7; February 1950 Uncl de g
Trans. # 257 by L. Lulich

DOROSHCHAK, A.S.

Measuring grid for use in determining the elevations of points.
Geod.i kart. no.5:62-64 My '61. (MIRA 14:6)
(Triangulation)

DOROSHCHENKOV, G.D.; LEONOVA, T.S., red.; ATROSHCHENKO, L.Ye.,
tekh. red.

[Chemistry, land, harvests] Khimia, zemlia, urozhai.
Moskva, Izd-vo "Znanie," 1964. 78 p. (Novoe v zhizni,
nauke, tekhnike. V Serii: Sel'skoe khoziaistvo, no.1-2)
(MIRA 17:3)

DOROSHCHENKO, G.

Use of mineral fertilizers should be controlled. Zemledelie
27 no.3:9 Mr. '65. (MIRA 19:1)

1. Spetsial'nyy korrespondent zhurnala "Zemledeliye."

DOROSHCHENKOV, G.D.

Woman field inspector. Zashch.rast. ot vred. i pol. 9 no. 10 16.
16 '64.

(MIRA 18:2)

KARSSKIY, Vladimir Yevgen'yevich; DOROSHCHENKO, Pavel Petrovich;
SYCHEV, M., red.; KUZNETSOVA, V., tekhn. red.

[Cupola furnaces with water cooling] Vagrunki s vodianym okh-
lazhdeniem. Lugansk, Luganskoe oblastnoe izd-vo, 1959. 12 p.
(MIRA 16:1)

(Cupola furnaces)

DOROSHCHENKOV, I.

We speed up construction and lower its costs on state farms.
Sel'.stroj. 14 no.10:4-6 O '59. (MIRA 13:2)

1. Nachal'nik upravleniya stroitel'stva v sovkhozakh Smolenskogo
oblastnogo upravleniya sel'skogo khozyaystva.
(Smolensk Province--Farm buildings)

ANGENITSKAYA, R., kandidat tekhnicheskikh nauk; KHUTORYANSKIY, M.,
kandidat tekhnicheskikh nauk; DOROSHCHUK, P., inzhener

Large-size building blocks made of vibrated clays. Stroi.mat.,
izdel. i konstr. 1 no.7:25-26 J1'55. (MLBA 8:11)
(Building blocks)

DOROSHCHIK, V.P. (Moskva)

Some results of treating respiratory disorders in poliomyelitis.
Klin.med. 36 no.3:97-103 Hr '58. (MIRA 11:4)

1. Iz Instituta po izucheniyu poliomyelita AMN SSSR (dir. -
chlen-korrespondent AMN SSSR prof. M.N.Chumakov, sav. klinicheskim
otdoleniyem - prof. Ye.N.Bartoshevich)
(POLIOMYELITIS, BULBAR, compl.
resp. disord., management (Rus))

DOROSHCHUK, V.P.

Emergency treatment and long-distance evacuation of poliomyelitis patients with respiratory disorders [with summary in French]. Zhur. nevr. i psikh. 58 no.7:778-783 '58

1. Institut po izucheniyu polioniyelita ANM SSSR, Moskva.
(POLIOMYELITIS, BULBAR, compl. resp. disord., emergency transportation (Rus'))

DOROSHCHUK, V.P. (Moskva)

Clinical forms, classification and pathogenesis of disorders of
respiration in acute poliomyelitis; review of the literature.

Klin.med. 38 no.9:34-42 S '60.

(MIRA 13:11)

(POLIOMYELITIS)

(RESPIRATION)

DOROSHCHUK, V.P. (Moskva)

Pharyngeal paralysis as a clinical form of a disorder of
respiration in acute poliomyelitis. Vest. otorin. no.6:17-21
'61. (MIRA 15:1)

(POLIOMYELITIS) (RESPIRATION)
(PHARYNX-PARALYSIS)

DOROSHCHUK, V. P. (Moskva)

Clinical aspects and treatment of paralysis and paresis of the
principal respiratory muscles in acute poliomyelitis. Klin. med.
no.9:60-70 '61. (MIRA 15:6)

(POLIOMYELITIS)

DOROSHCHUK, V.P. (Moskva)

Atelectasis of the lungs in poliomyelitis with respiration
disorders. Sov.med. no.3:30-36 '62. (MIRA 15:5)
(POLIOMYELITIS) (LUNGS---COLLAPSE) (RESPIRATION)

DOROSHCHUK, V.P. (Moskva)

Clinical aspects and treatment of paralysis and paresis of the
principals respiratory muscles in acute poliomyelitis. Report
No.2. Klin.med. no.4:59-64 '62. (MIRA 15:5)
(POLIOMYELITIS) (RESPIRATORS)

DOROSHCHUK, V.P. (Moskva)

Pneumonias in poliomyelitis patients with a respiratory disorder.
Vrach.delo no.12:101-105 D '62. (MIRA 15:12)

1. Klinicheskoye otdeleniye (sav. - prof. Ye.N.Bartoshevich)
instituta po izucheniyu poliomyelita AMN SSSR i gorodskaya
infektsionnaya klinicheskaya bol'nitsa No.2, Moskva.
(POLIOMYELITIS) (PNEUMONIA) (ARTIFICIAL RESPIRATION)

DOROSCHUK, V.P. (Moskva)

Antibiotic therapy in infectious bacterial pulmonary processes
in poliomyelitis with respiratory disorders. Antibiotiki 7
no.10:931-935 0'62 (MIRA 16:12)

DOROSHCHUK, Vladimir Pavlovich; MANOVICH, Z.Kh., red.; BEL'CHIKOVA,
Yu.S., tekhn. red.

[Disorders of respiration in acute poliomyelitis and other diseases; pathogenesis, diagnosis, clinical aspects, and treatment] Narusheniia dykhanii pri ostrom poliomielite i drugikh sabolevaniakh; patogenez, diagnostika, klinika i lechenie. Moskva, Medgiz, 1963. 235 p. (MIRA 16:7)
(POLIOMYELITIS) (RESPIRATORY ORGANS—DISEASES)

DOROSHCHUK, V.P.

Methods for improving modern equipment for prolonged artificial respiration. Vest.khir. 90 no.3:81-87 Mr'63.

(MIRA 16:10)

1. Iz laboratorii po peresadke organov (zav. - doktor med nauk V.P.Demikhov) Moskovskogo nauchno-issledovatel'skogo instituta skoroy pomoshchi imeni N.V.Sklifosovskogo. Adres avtora: Moskva, TS-27, d.5, Institut poliomyetia.

(RESPIRATORS)

DOROSHCHUK, V.P.

Problem of the physiological effect of artificial respiration.
Trudy Inst. im. N.V. Sklif. 9:255-267 '63. (MIRA 18:6)

1. Moskovskiy gorodskoy nauchno-issledovatel'skiy institut skoroy pomoshchi imeni Sklifosovskogo.

Doroshchuk, V. Ye.
USSR/Fluid Mechanics.

Abs Jour: Ref Zhur-Mekhanika, No 5, 1957, 5686

Author : Doroshchuk, V. Ye.

Inst :

Title : Investigation of Heat Exchange in Narrow Circular Apertures.

Orig Pub: Teploenergetika, 1956,³ No 1, 14-16.

Abstract: The heat exchange between the interior wall and gas was experimentally investigated under the following conditions: ratio of external to internal diameter of the channel $d_2/d_1 = 1.1$, Reynolds Number R from 2×10^4 to 2.2×10^5 , and Mach Numbers from 0.2 to 0.6. The interior stainless steel thin-walled pipe was heated by passing low-voltage alternating current through it. The quantity of heat was determined by measuring the amperage of the heater current, and correcting for radiation. The pressure and temperature were measured along the working length of the pipe. The ratio t_2/t_1 of the temperatures

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KUTATELADZE, Samson Semenovich; BORISHANSKIY, Veniamin Mironovich;
MOCHAN, S.I., RED.; ARMAND, A.A., retsenzent; BERMAN, L.D.,
retsenzent; DOROSHCHUK, V.Ye., retsenzent; LEL'CHUK, V.L.,
retsenzent; PIROGOV, M.S., retsenzent; RYVKIN, S.A., retsenzent;
SOKOLOV, Ye.Ya., retsenzent; ZABRODINA, A.A., tekhn.red.;
LARIONOV, G.Ye., tekhn.red.

[Handbook on heat transmission] Spravochnik po teplperedache.
Leningrad, Gos. energ. izd-vo, 1958. 414 p. (MIRA 12:1)
(Heat--Transmission.)

VOJTBERO, D.B.; DOROSHCHUK, V.Ye.; KRIKUNCHIK, A.B.; LEBEDEV, B.P.; PAKSHVER,
V.B.; ROKOFFAN, B.S.; SEMENISOV, V.A. [deceased]; SERBINOVSKIY, G.V.

General aspects. Elek. sta. supplement no. 1:2-4 Ja-F '58.
(MIRA 11:7)

(Power engineering)

8(6)

SOV/112-59-4-6428

Translation from: Referativnyy zhurnal. Elektrotehnika, 1959, Nr 4, p 4 (USSR)

AUTHOR: Vol'fberg, D. B., Doroshchuk, V. Ye., Krikurchik, A. B.,
Lebedev, B. P., Pakshver, V. B., Rokotyan, S. S., Sementscv, V. A., and
Serbinovskiy, G. V.

TITLE: General Review of the Power Industry Abroad (1956-1957)

PERIODICAL: Energokh-vo za rubzhom, 1958, Nr 2, pp 1-48

ABSTRACT: Bibliographic entry.

Card 1/1

DOROSHCHUK, V. Ye.

AUTHOR: Doroshchuk, V.E. (Cand.Tech.Sci.) 90-3-21/26
TITLE: An International Atomic Exhibition (Mezhdunarodnaya atomnaya vystavka)
PERIODICAL: Teploenergetika, 1958, . . . No.3. pp. 85-86 (USSR)
ABSTRACT: This is a brief account of the atomic exhibition opened in the summer of 1957 in Amsterdam. Photographs of four of the models included in the exhibition are given. British atomic energy had a good showing, the first British power reactors will have graphite moderator and gaseous heat transfer medium. Reactors of this kind are bulky but fairly reliable and safe. They are economic because they do not call for the use of expensive and rare metals for their construction. They also have the advantage of using natural uranium which is of particular importance for England, which has no diffusion works for producing enriched uranium. Calder Hall and the South Scotland Station are described. There are 4 figures.
AVAILABLE: Library of Congress.

Card 1/1

DOROSHCHUK, V.Ye., kand.tekhn.nauk; RIVKIN, S.L., kand.tekhn.nauk

Shippingport Atomic Power Plant (U.S.A.). Elek. sta. no.4

Supplement:9-14 J1-Ag '58.

(MIRA 11:10)

(Shippingport--Atomic power plants)

Д. Р. 654 Ч. II К. V. Ye.

24(8)

PHASE I BOOK EXPLOITATION

SOV/3459

Moscow. Vsesoyuznyy teplotekhnicheskiy institut

Teploobmen pri vysokikh teplovykh nagruzkakh i drugikh spetsial'nykh usloviyakh; sbornik statey (Heat Exchange Under High Thermal Loads and Other Special Conditions; Collection of Articles) Moscow, Gosenergoizdat, 1959. 135 p. 4,000 copies printed.

Ed. (Title page): A. A. Armand; Ed. (inside book): I. K. Korikovskiy; Tech. Ed.: G. I. Matveyev,

PURPOSE: The book is intended for personnel of scientific research institutes, planning and design organizations, and for power engineers.

COVERAGE: This collection of 9 articles presents the results of research conducted at the All-Union Heat Engineering Institute. Problems of heat exchange under high pressure and other special conditions are analyzed. Attention is devoted to special cases such as heat exchange from wall to water, including cases of ordinary and surface boiling; heat transfer to steam and water under supercritical parameters; heat exchange from pipe wall to gas under high pressure; and the hydraulic resistance of a heated tube. References are given at the end of each article.

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Heat Exchange Under High (Cont.)

SOV/3459

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Heat Exchange Under High (Cont.)

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| 7. Lel'chuk, V. L., and B. V. Dyadyakin. Experimental Determination of Hydraulic Resistance With Turbulent Flow of Air in a Heated Tube | 91 |
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AVAILABLE: Library of Congress (QC320.M68)

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TM/lsb
5-4-60

SOV/96-59-9-15/22

AUTHORS: Doroshchuk, V. Ya. (Candidate of Technical Sciences) and
Frid, F.P. (Engineer)

TITLE: The Influence of Throttling the Flow and of Heating a
Length of Pipe on Critical Thermal Loadings

PERIODICAL: Teploenergetika, 1959, Nr 9, pp 74-79 (USSR)

ABSTRACT: A good deal of experimental work has been published on
critical thermal loadings during forced flow of water and
steam/water mixtures, but unfortunately there are
considerable differences between the results of various
authors. Recently workers in the Power Institute of the
Ac. Sc. USSR have published articles in Teploenergetika
and elsewhere in which they point out the important
effects of throttling the flow at the inlet to the
experimental channel and of the heated length of the
experimental pipe. It is claimed that throttling
disturbs the flow, alters the structure of two-phase flow
and causes boiling of the water. Alteration in the
length of pipe heated also alters the structure of flow
in heated and unheated pipes. Therefore, the degree of
stabilisation of flow structure at constant velocity,
pressure and steam content at the point where critical

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SOV/96-59-9-15/22

The Influence of Throttling the Flow and of Heating a Length of Pipe on Critical Thermal Loadings

conditions occur, depends on the distance of this point from the commencement of heating. These views cannot be ignored because they introduce important factors not usually considered. The experimental rig used in the Power Institute of the Ac. Sc. USSR is illustrated diagrammatically in Fig 1 and is briefly described. From consideration of this system it is concluded that one of the heat exchangers is a source of considerable pulsation which might affect the experimental section of the apparatus and the critical thermal loadings. It is accordingly possible that the observed influence of throttling the flow and of the length of heated pipe may be peculiar to the equipment used in the Power Institute. The All-Union Thermo-Technical Institute accordingly investigated the influence of flow pulsation, and of the length of pipe heated, on critical thermal loading. A diagram of their experimental rig is given in Fig 2 and it is briefly described. The experimental procedure and methods of measurement are also recounted. In order to determine the influence of throttling on critical thermal loadings, tests were made with the throttling valve in

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The Influence of Throttling the Flow and of Heating a Length of Pipe on Critical Thermal Loadings

different positions, with different rates of flow, and with water heated to different temperatures. The results of the tests are plotted in Fig 3 and they show that turbulence caused by throttling at the inlet has no influence on the critical thermal load. Moreover, the results confirm that any effect of throttling is not due to the flow becoming turbulent. The effect only alters the large pulsations of working fluid leaving the heat exchanger in the Power Institute's equipment. The way in which the pulsations could occur in the heat exchanger is explained. Two series of tests were run to check the explanation; the results, plotted in Fig 4, confirm that pulsations really do reach the measuring section. Unfortunately, low-inertia instruments were not available and the magnitude of the pulsation could only be judged by movements of the manometer needles. The question of the influence of the length of the tube heated is of considerable importance as most laboratory rigs use relatively short tubes whilst long tubes are found in practice. Tests were accordingly made with water and

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The Influence of Throttling the Flow and of Heating a Length of Pipe on Critical Thermal Loadings

steam/water mixture on tubes of various lengths at a pressure of 100 atms. To ensure that the installation was similar in other respects the only change made was to make one of the electric contacts moveable. In order to check the rate of flow a cooler, which is not shown in Fig 2, was installed at the outlet from the experimental section in order to condense the steam/water mixture to a single-phase liquid. Two series of tests were run at a pressure of 100 atm; the test conditions are given and the test results are plotted in Figs 5 and 6. They show that the length of tube heated has practically no influence on the critical thermal loading for the ratios of length to diameter investigated. The lack of experimental points on the right-hand side of the graph in Fig 5 results from the fact that critical conditions do not arise at high rates of flow and steam contents around 0.5. Returning again to the experimental results of the Power Institute concerning the influence of the length of tube heated, it is assumed that they reached their conclusion because they disregarded the important pulsations of working substance that occur in their apparatus.

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The Influence of Throttling the Flow and of Heating a Length of Pipe on Critical Thermal Loadings

To confirm this the present experiments on tubes of different lengths were repeated with pulsation present. The results are plotted in Fig 7 and Fig 8, where the straight lines correspond to the mean results obtained for tubes of various lengths in tests without pulsation (Figs 5 and 6). The peculiar shape of the curves obtained in the presence of pulsation is explained as being due to differences in the steam content in the water in different parts of the pipe at different times. It is only when conditions are such that steam/water mixture is present throughout the pipe that the curves come into line with those obtained in the absence of pulsation. This confirms that the results attributed by the Power Institute of the Ac. Sc. USSR to other factors are really due to pulsation. The important part played by pulsation flow in governing critical heat transfer has no direct relationship to the selection of permissible heat loadings in vessels containing water under pressure because, in the absence of a steam phase in the first circuit, there is no reason for pulsations to arise. Disturbances of

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SOV/96-59-9-15/22

The Influence of Throttling the Flow and of Heating a Length of
Pipe on Critical Thermal Loadings

flow due to local resistances have much less influence
on critical thermal loadings than pulsations caused by
Card 6/6 steam condensation.
There are 8 figures and 7 Soviet references.

ASSOCIATION: Vsesoyuznyy teplotekhnicheskiy institut
(All-Union Thermo-Technical Institute)

SOV/96-59-10-22/22

AUTHOR: Doroshchuk, V.Ye. (Cand.Tech.Sci.)

TITLE: Review of a Book on Atomic Energy - 'Nutzenergie aus Atomkernen'. Dr. Karl Rudolf Schmidt. Bd. I. Berlin, 1959

PERIODICAL: Teploenergetika, 1959, Nr 10, p 96 (USSR)

ABSTRACT: The review is generally favourable but observes that the book contains a good deal of unnecessary material. There is 1 German reference.

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USC&A-DC-61,759

Doroshchuk, V. Ye.

21.1920

82198

S/091/60/000/02/02/002

AUTHOR: Doroshchuk, V. Ye., Engineer

TITLE: Development of Nuclear Power ¹⁹ Engineering in the USSR

PERIODICAL: Energetik, 1960, No. 2, pp. 27 - 33

TEXT: This article is meant for lower grade personnel of power systems, explaining advantages and shortcomings of various types of heat-carriers and inhibitors used in atomic power engineering. One American "boiling" type atomic reactor is briefly described, with a brief statement that a large plant of this type is under construction in the USSR. England is said to be widely using atomic power plants with gas heat-carriers, and the vantage points of such power plants are briefly explained. Liquid metals, such as sodium, an alloy of sodium with potassium, mercury, and an alloy of lead with bismuth are said to have good outlooks for being used as heat-carriers. They have high boiling points, can engender an output temperature of 500-600° C and more, and have high coefficients of heat transfer. A diagram of the first Soviet atomic power plant constructed in 1954 is shown in Figure 2, and that of an atomic power plant with steam superheating is shown in Fig-
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Development of Nuclear Power Engineering in the USSR

ure 3. A large atomic power plant of the latter type is said to be under construction now (location not given). Prior to entering the turbine, its steam will have a pressure of 90 atm and a temperature of 480-500°C. Each reactor will operate a 100 Mw turbine. The plant will have 34-35% efficiency. Another large atomic power plant at present under construction in the USSR will have reactors with pressurized water. Water applied under pressure of 100 atm will serve as the heat-carrier and as the inhibitor, at the same time. The reactor has a cylindrical body, made of a strong heat-resistant steel, plated on the inside with stainless steel. It is provided with a flat detachable cover, and its bottom is elliptically shaped. A 40-90 mm thick steel screen and a 200 mm thick layer of water provide protection against the neutrons. The active zone is made in the form of an extractable basket containing hexahedral zirconium magazines. Primary fuel will consist of uranium dioxide: natural (17 t) and enriched up to 1.5% (23 t). Three turbines, each of 70 Mw capacity, will be fed with 29 atm saturated steam. The end of the article deals with atomic power engineering in the USSR in general. It is expedient to build atomic power plants mainly within the European part of the country, in order to re-

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duce the consumption of local expensive coals and preclude the necessity to import coal from other, far-away regions. First atomic power plants must be large, since only such plants can produce 1 kw/h at a reasonable cost, and provide adequate experience for the construction of atomic power plants in the future. The majority of early atomic power plants will use pressurized water for heat-carriers. For the first time in the world, the USSR is building an atomic power plant where superheated steam will be fed into normal-parameter, standard turbines. All atomic power plants being built in the USSR at present are of condensation types. As a measure of precaution they will not, at this stage of development, be used for thermal engineering purposes. There are 7 diagrams.

✓

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DLRHEIK V

USSR

KOSITSKIY, V. M., ROYBY, I. J., and
 K. A. KHARIN, S. S., all with the Central
 Boiler and Turbine Institute, Dept. I. I.
 Polunov, Leningrad. Use of thermodynamic
 stability in generalizing experimental data on
 heat transfer. (Section IV, B)
 DUBINSKIY, V. S., and A. I. G. G. G. G. G. G.
 Kazanskaya, Kazan. All-Union Scientific
 Research Institute of Mechanical Engineering (V. I.
 Izvestiya) - "Critical boiling in tubes"
 (Section III A)
 KAZAN, V. S., KHARIN, I. J., Y. A.,
 and KHARIN, I. J., all with the Moscow Power
 Engineering Institute, Ministry of Higher Education
 USSR - "An investigation of heat transfer to fluids
 flowing in pipes under a-supercritical conditions"
 (Section V)
 ZAKHAROV, S. S., Institute of Power Engineering,
 Academy of Sciences, Uzbekistan SSR, Minsk
 (1959 position) - "Heat transfer by fluidized bed"
 (Section VI)

report submitted but not presented at the International Conference on Heat Transfer
Bozler, Colorado, 23 Aug - 1 Sep 1961.

GORSHKOV, A.S., red.; DOROSHCHUK, V.Ya., red.; KUZNETSOV, N.V., red.;
MELEYEV, A.S., red.; BORUNOV, N.I., tekhn. red.

[Increasing the steam parameters and operating capacity of
units in heat engineering] Povyshenie parametrov para i
moshchnosti agregatov v teploenergetike; sbornik statei.
Moskva, Gos. energ. izd-vo, 1961. 513 p. (MIRA 15:3)
(Electric power plants--Equipment and supplies)
(Steam turbines)

5/196/62/000/016/009/011
E194/E155

AUTHORS: Doroshchuk, V.Ye., and Makarov, Yu.N. .

TITLE: The boiling-water reactor - a promising set for nuclear power

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.16, 1962, 34, abstract 16 G 238. (Elektr. stantsii, no.4, 1962, 11-14).

TEXT: The disadvantages of nuclear power installations with water-cooled water-moderated reactors are pointed out. To obtain saturated steam at a pressure of 30 atm in the steam generator it is necessary to maintain 100 atm in the reactor, which greatly complicates the installation. The disparate water pressures in the first and second circuits reduce the thermal efficiency of the heat-power cycle. Moreover, a large quantity of heat-transfer medium is pumped through the reactor; at one nuclear power station the amount is 27 000 cubic metres/hour. The boiling-water reactor is free of these defects. However, a large volume of steam in the reactor would cause unstable operation. This may be avoided if the equipment produces steam at two pressures. Here, the steam-water
card 1/2

The boiling-water reactor - a ... S/196/62/000/016/009/011
E194/E155

mixture formed in the reactor is delivered to a primary-steam separator. The saturated steam there separated is delivered to a turbine and the water is pumped back to the reactor through the secondary-steam evaporator. Secondary steam from the evaporator is delivered to the secondary-steam separator and thence to the intermediate stage of the turbine. Problems of stable operation and power control of such a reactor are considered and also the purity of steam and the radioactive contamination of the circuit. For pressures above 70 atm the output of a boiling-water reactor is limited because filmwise boiling occurs at certain critical loadings and is accompanied by considerable impairment of heat transfer. One way of making boiling-water reactor equipment more economic is to superheat the steam either in the reactor itself (nuclear superheat) or in a special fired superheater. Nuclear superheat is the more promising.

[Abstractor's note: Complete translation.]

Card 2/2

43196

S/855/62/000/000/005/005

E194/E435

26.5400

AUTHORS: Alad'yev, I.T., Doroshchuk, V.Ye., Miropol'skiy, Z.L., Styrikovich, M.A.

TITLE: Critical boiling in tubes

SOURCE: Teploperedacha. Energ. inst. AN SSSR. Ed. by M.A.Mikheyev. Moscow, Izd-vo AN SSSR, 1962. 124-132

TEXT: A good many critical boiling tests have been made in recent years, usually whilst water is being pumped through an electrically heated stainless steel pipe. It is usually considered that the critical heat transfer rate is uniquely determined by the pressure, rate of flow and the enthalpy of the medium at the place of critical boiling. This article considers the effects of other factors, such as the distribution of heat flow over the perimeter and length of the pipe, the dimensions of the test length and of neighbouring parts of the system and the compressibility of the fluid in neighbouring parts of the system. This latter point is important because flow pulsations can develop during the tests and when neighbouring spaces are filled with compressible substances, whereas if neighbouring spaces are Card 1/3

Critical boiling in tubes

S/855/62/000/000/005/005
E194/E435

filled with incompressible substances pulsations do not develop. Pulsating conditions are the least favourable and they must often be suppressed. It sometimes does not suffice to fit a resistance between the expansion vessel and the heated pipe. If the internal diameter of the test pipe is reduced from 8 to 3 mm there is some increase in the critical heat transfer rate. The length of the test piece can have various effects depending upon the flow conditions, particularly when pulsation is present. The thickness of the duct walls (0.4 and 2 mm respectively) and the roughness of the inner surface (even 0.12 to 0.15 mm deep transverse grooves) had little influence on the critical heat flow. The effects of increasing the pressure, the rate of flow and the enthalpy of the fluid in increasing the critical heat transfer rate are discussed. Experimental work on determination of critical heat transfer rates during the flow of water and steam/water mixtures in pipes is briefly reviewed. Although several methods of generalizing experimental results have been proposed in the USSR the empirical formulae are complicated and often contain numerous empirical constants. Reliable generalizations will only
Card 2/3

Critical boiling in tubes

S/855/62/000/000/005/005
E194/E435

be possible when the actual mechanism and physical laws of critical bubble-wise boiling are understood, which is not yet the case. There are 7 figures.

X

Card 3/3

43394

S/262/62/000/023/001/011
E194/E155

2/100°

AUTHORS: Doroshchuk, V.Ye., and Makarov, Yu.N.

TITLE: The boiling-water reactor; a promising nuclear power equipment

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk, Silovyye ustanovki, no.23, 1962, 2, abstract 42.23.4. (Elektr. stantsii, no.4, 1962, 11-14)

TEXT: Boiling-water reactors have the following advantages over the pressurised-water type: for a given turbine steam pressure, the pressure of steam in the reactor is considerably lower; the reactor frame is cheaper; the thermal efficiency of the power cycle is higher. The most important problems in the use of boiling-water reactors are stability of operation and the need to produce very pure steam. Instability is associated with changes in pressure, steam content, and reactivity of the active zone during transient processes. Investigations have shown that at relatively light loads random power fluctuations occur which may attain 20% of the mean output, if the heat-transfer medium is at atmospheric pressure. These variations become much less when
Card 1/3

The boiling-water reactor; a ...

S/262/62/000/023/001/011
E194/E155

the pressure is raised. Power variations at a definite frequency of $1.2 - 1.9 \text{ sec}^{-1}$ occur at a higher power level, and are of the nature of impulses of several complete oscillations. As the reactor load is increased the amplitude and number of oscillations in the impulse also increase and the interval between impulses diminishes. The amplitude of the oscillations diminishes on increasing the pressure. So-called resonance power instability occurs at a certain, fairly high, power level and is typified by a rapid increase in amplitude of oscillation. The designed output of the reactor should be sufficiently below the output that gives resonance instability. Investigations have shown that a negative temperature coefficient of reactivity effectively limits random accidental increase in set output. By making the heat transfer circuit of alloy steels, by providing continuous blow-down of the circuit, by measuring effective sealing of the condenser and efficient separation of moisture from the steam, steam of high purity can be obtained and appreciable contamination of the turbine and condenser with radioactive substances can be avoided.

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The boiling-water reactor; a ...

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E194/E155

A further way of improving the economics of boiling-water reactors is to superheat the steam, either within the reactor or in a special fired superheater. However, the combination of nuclear and fossil fuel at one and the same power station has serious disadvantages. In the USSR a nuclear power station is being constructed with a graphite moderated water-cooled reactor in which the saturated steam will be superheated in the reactor.
4 figures.

[Abstractor's note: Complete translation.]

Card 3/3

L 19494-63

EPR/EPF(c)/EWT(1)/EPF(n)-2/BDS

AFFTC/ASD/SSD

PS-4/Pr-4/Pu-4 WW

ACCESSION NR: AP3004757

S/0096/63/000/008/0073/0076

AUTHORS: Doroshchuk, V. Ye. (Candidate of technical sciences); Lantsman, F. P. (Engineer)

70

TITLE: Effect of channel diameter on critical thermal load

SOURCE: Teploenergetika, no. 8, 1963, 73-76

TOPIC TAGS: critical temperature, mixed flow, thermal load

ABSTRACT: This report presents the results of experimental investigations on the critical load in circular tubes with diameters of 3, 4, 6 and 8 mm ($l/d > 10$), carrying a flow of water and water-vapor mixture under variable pressures of 50, 80, 100, 140, 170 atm and a mass-flow rate of 2860 kg/m² per second. It is shown that the critical thermal load q_{cr} decreases with an increase in tube diameter. An empirical expression is proposed which is given by

$$q_{cr}/q_0 = 1 - \frac{A}{q_0} \left(\sqrt[3]{\frac{8}{d}} - 1 \right) \quad (1.)$$

Card 1/2

L 19494-63

ACCESSION NR: AP3004757

where

d - tube diameter, mm

A - coefficient, dependent on pressure

$p, \text{ atm}$ $\lambda \cdot 10^{-4}$	50	80	100	140	170
	8,9	8,53	8,77	8,77	8,40

(2)

The experimental results are shown to fit this curve with reasonable scatter. Orig. art. has: 9 figures, 1 equation, and 1 table.

ASSOCIATION: Vsesoyuznyy teplotekhnicheskii institut (All-Union Heat Engineering Institute)

SUBMITTED: 00

DATE ACQ: 30Aug63

ENCL: 00

SUB CODE: MD

NO REF SOV: 004

OTHER: 000

Card 2/2

DOROSHCHUK, V.Ye., kand.tekhn.nauk; MAL'TER, V.L., inzh.

Flow fluctuations at large thermal loads. Energomashinostroenie 9 no.
12:41-42 D '63. (MIRA 17:1)

DORQ3HCCHUK, V.Ye., kand.tekhn.nauk

Principal trends in the improvement of the efficiency of turbine systems. Energetik 11 no.10:1-4 0 '63. (MIRA 16:11)

L 06564-07 EWT(1) WW
ACC NR: AP6029780

SOURCE CODE: UR/0294/66/004/004/0552/0561

AUTHOR: Doroshchuk, V. Ye. (Moscow)

ORG: None

17
B

TITLE: Critical heat exchange in an evaporative tube

SOURCE: Teplofizika vysokikh temperatur, v. 4, no. 4, 1966, 552-561

TOPIC TAGS: heat theory, nucleate boiling

ABSTRACT: It is shown that two different types of heat exchange may take place in a steam generating tube. One set of critical conditions is due to the transition from nucleate to film boiling, while the second type of crisis is observed in the case of considerable steam concentrations and develops when the liquid film near the wall dries up. The characteristics of both forms of criticality are discussed and it is shown that the steam concentration of the boundary layer is affected by the relative length of the tube and is considerably reduced by an increase in heat flux. Particular attention is given to the second type of crisis since the steam concentration which results in this type of heat exchange is of considerable practical interest. It is shown that failure to consider the characteristics of both forms of critical condition has led to considerable contradictions in the literature on critical heat exchange. Orig. art. has: 6 figures.

SUB CODE: 20/ SUBM DATE: 28Jan65/ ORIG REF: 015/ OTH REF: 008

ns
Card 1/1

UDC: 536.248.2

DOKOSMEZ, S.

Distr: 4E2c

Changes in the Viscosity of Transformer Steels During the Cooling Process. ¹⁸ ~~S. S. Doroshin, B. A. Larkin and O. N. Shubin. (Fizika Metallov i Metallovedenie, 4, (1), 171-178).~~ ⁵
[In Russian]. The viscosity of these high-alloy transformer steels during the cooling process after annealing, follows a curve showing a maximum. This law becomes evident in stepped cooling. A speeding up of the cooling process after annealing increases the viscosity. The presence of the coarse cementite, even along the boundaries of the ferrite grains, although it increases the brittleness of the steel, is not the only cause of it. — L. K. ¹¹
OK 83

DOROS HEK S.T.

18
18 AE2C-1

Change of plasticity of transformation steel during the cooling process. S. I. Lomshak, N. I. Lapina, and O. N. Chubir. Tr. Akad. Nauk SSSR, Ser. Fiz. Mat. Nauk, 1971, (1971), 171-172. One kg. packs of sheets were heated for 2 hrs. at 750-800°, cooled at 5-60°/hr. to a lower temp. and then in air. The no. of flat heads obtained on these samples plotted against the temp. at which air cooling started showed that for all steels tested there was a sharp max. in ductility, but at different temps. No coercive force variation is assoc. with the changes in ductility, and no changes in metallographic appearance. Coarse cementite inclusions reduce plasticity but are not the single cause of brittleness. J. D. Cat

18
18 AE2C-1

JM
MT

18

~~XXXXXXXXXX~~
DOROSHEK, S.I.

126-3-13/34

AUTHORS: Lapkin, N. I., Shubin, G.N. and Doroshek, S.I.

TITLE: Critical range of brittleness of electrical steels.
(Kriticheskiy interval khрупkosti elektrotekhnicheskikh staley)

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals
and Metallurgy), 1957, Vol.4, No.3, pp. 478-482 (U.S.S.R.)

ABSTRACT: The ductility was determined in the temperature range -80 to +300 C of dynamo and transformer steels from commercial open hearth melts containing 1.08 to 4% Si and also for transformer steel containing 4.8 to 5.8% Si produced in an induction furnace. The change in the ductility was determined from the measured impact strength, number of bends until failure, stretching and pressing in accordance with Ericssen. The graph, Fig.1, gives the measured results of the change in the impact strength as a function of temperature for 1.0, 2.26, 3.56 and 4% Si contents; the graph, Fig.2, gives the influence of the Si content on the plastic properties at room temperature; Fig.3 gives the change in the number of bends (until failure) of high alloy transformer steel as a function of the test temperature; the graph, Fig.4, gives the anisotropy of transformer steel before and after high temperature annealing in vacuum for the temperature range -20 to +300 C, by plotting the respective

Card 1/3

126-3-13/34

Critical range of brittleness of electrical steels. (Cont.)
values in the direction of rolling as well as transverse to the direction of rolling. The critical brittleness temperature range of electrical steels changes within wide limits (between -80 and +250 C) depending on the Si content. Change over from the tough to the brittle state with increasing temperature is continuous inside a relatively large temperature range. Of great importance on the tendency of electrical steels to develop brittleness is the character of the deformations, the direction of rolling and the heat treatment regime. The anisotropy of the impact strength is more pronounced in the tough state than in the brittle state and can be appreciably reduced by high temperature annealing. Utilisation of low temperature heating permits increasing the ductility of transformer steel 15 to 20 times and represents a high quality reserve for influencing the technological properties of this steel, both during its production in the steel-works as well as during actual working in engineering works. Electrical steels are subject to the known phenomenon of blue brittleness. Plastic deformation accelerates and increased Si content decelerates processes responsible for developing blue brittleness.

Card 2/3

126-3-13/34

Critical range of brittleness of electrical steels. (Cont.)
There are 4 figures, 1 table and 4 references, one of which
is Slavic.

SUBMITTED: May 11, 1956.

ASSOCIATION: Ural Ferrous Metals Scientific Research Institute.
(Ural'skiy Nauchno-Issledovatel'skiy Institut Chernykh
Metallov).

AVAILABLE: Library of Congress

Card 3/3

181141

67692

AUTHOR:

Doroshek, S.I.

SOV/126-8-4-14/22

TITLE:

Plasticity of Transformer Steel after Heat Treatment at Temperatures of 300-900 °C

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 4, pp 590-594 (USSR)

ABSTRACT: The author points out that according to the literature (Refs 1, 2) complicated phase changes occur in micro-volumes of transformer steel, the changes in its ductility in cooling after annealing are also complicated (Refs 3, 4) and cannot be explained by cementite solution and precipitation (Refs 5, 6). In the present work some experimental data were obtained on which a general picture of the toughness changes of transformer steel after heat treatment at 300-900 °C could be based. Four heats, A, B, C, D, of medium-alloy transformer steel were used with the following percentage compositions respectively: 3.60, 3.74, 3.58, 3.56 Si; 0.047, 0.036, 0.050, 0.070 C; 0.17, 0.23, 0.14, 0.18 Mn; 0.022, 0.033, 0.020, 0.020 P; 0.020, 0.017, 0.011, 0.015 S; 0.12, 0.12, 0.10, 0.10 Cr; 0.009, 0.009, 0.010, - Ti; ✓

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67692

SOV/126-8-4-14/22

Plasticity of Transformer Steel after Heat Treatment at
Temperatures of 300-900 °C

0.036, 0.065, 0.055, 0.050 Al; 0.16, 0.15, 0.12,
0.16 Cu. 0.5 x 30 x 250 mm test pieces were subjected
to various heat treatments and tested at room
temperatures on a special bending machine. Occasionally,
carbon and microstructure determinations were carried
out. The results of the work are shown graphically.
Fig 1 shows number of bends (top) and the toughness
(bottom) as functions of tempering temperature for
heat A. Figs 2 show curves of number of bends vs
tempering temperature for heats B, B and C. Fig 3
gives the curves for heat C, hardened from 900 °C, for
tempering times of 2, 4 and 8 hours (curves 1, 2 and 3
respectively). Plots of number of bends against
holding time for tempering at 400 and 500 °C are given
in Fig 4 for specimens subjected to various heat
treatments. The work shows that there are (at 725-825,
525-575 and 350-400 °C) three falls and two maxima
(at 650-700 and 425-450 °C) of toughness for the
transformer steel after tempering at 300-900 °C. These
effects can be utilised to modify the plasticity and the

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2/3

67692

SOV/126-8-4-14/22

Plasticity of Transformer Steel after Heat Treatment at
Temperatures of 300-900 °C

longer the specimen is at temperatures characterizing
extreme values of toughness the greater the resulting
change. The extreme change in the plasticity of
transformer steel on treatment at 300-900 °C points to
the occurrence in this range of complex diffusional
processes in micro- or submicro-size volumes.

Card
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There are 4 figures, 1 table and 7 references, of which
5 are Soviet and 2 English.

ASSOCIATION: Ural'skiy nauchno-issledovatel'skiy institut
chernykh metallov
(Urals Scientific Research Institute for Ferrous
Metals) ✓

SUBMITTED: July 17, 1958

67769

SOV/126-8-5-22/29

18.7500
18.1141
AUTHOR:
TITLE:

Doroshek, S.I.

Effect of Phosphorus on the Structural Transformations
and Properties of Low-Alloy Electric Steel

PERIODICAL: Fizika metallov i metallovedeniye, Vol 8, 1959, Nr 5,
pp 770-776 (USSR)

ABSTRACT: A low-alloy silicon steel¹ (1.8% Si), made in a 300 kg
induction furnace, was used for the study. All ingots
of the experimental steel had a similar composition as
regards impurities, except for phosphorus (0.25-0.30% Mn,
0.21-0.30% Cr, 0.08% Ni, 0.04% S, 0.15% Cu, traces of
aluminium). The phosphorus content of the ingots was:
0.03, 0.06, 0.12, 0.21, 0.36, 0.56 and 0.70%. The
experimental ingots were rolled into sheets of 0.50 mm
thickness and divided into two portions, one of which
was used for laboratory investigation and the other for
industrial experiments. As the carbon content in the
industrial steel after annealing is usually 0.008 to
0.018%, the author used sheets which had been earlier
annealed (after low temperature tunnel annealing)
0.008% C, as well as untreated sheets
0.03% C. Magnetic tests were

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SOV/126-8-5-22/29

Effect of Phosphorus on the Structural Transformations and Properties of Low-Alloy Electric Steel

carried out on separate strips as well as on 1 kg Epshtein probes. The electrical resistivity of each compound was taken as the average result of testing 10-15 strips. The plasticity was estimated in accordance with the requirements of GOST 802-58^(b) from the minimum number of bends at a temperature of 15 to 20 °C. Fig 1 shows the effect of phosphorus on the recrystallization temperature range and grain size of siliceous steel (T_{pk} - temperature at the end of recrystallization; T_{pn} - temperature of the apparent commencement of recrystallization; N - number of grains per mm^2 after annealing at 950 °C for 2 hours). Fig 2 shows the effect of phosphorus on the degree of critical working and grain size after critical growth: (1) change of the critical degree of deformation, (2) change of grain size as a result of critical growth at 950 °C for 2 hours. Fig 3 shows the microstructures of specimens with different phosphorus contents after quenching from 1150 °C. In Table 1 the quantity of transformed austenite (%) in relation to quenching ✓

Card
2/4

67769

SOV/126-8-5-22/29

Effect of Phosphorus on the Structural Transformations and Properties of Low-Alloy Electric Steel

temperature and phosphorus content of the steel is given. In Table 2 the results of electromagnetic tests and the plasticity are given for steels with various phosphorus contents after low-temperature annealing under laboratory conditions (850 °C, 4 hours) and high-temperature industrial annealing (1090 °C, 24 hours).

The author arrives at the following conclusions:

1) Increase in phosphorus content in low-alloy silicon steel results in grain growth, raises the recrystallization temperature, decreases the degree of critical cold working and the percentage volume occupied by phase transformations. 2) A similar effect of phosphorus on the structure brings about a considerable improvement in the magnetic properties of electric steel. 3) Addition of definite amounts of phosphorus to low-alloy silicon steel and use of a critical amount of working before final annealing enables new types of electric steel with good magnetic properties to be produced.

There are 3 figures, 2 tables and 10 references, of which 2 are Soviet, 4 German and 4 English.

Card
3/4

67769

SOV/126-8-5-22/29
Effect of Phosphorus on the Structural Transformations and
Properties of Low-Alloy Electric Steel

ASSOCIATION: Ural'skiy nauchno-issledovatel'skiy institut
chernykh metallov
Ural'sk Scientific Research Institute of
Ferrous Metals)

SUBMITTED: January 21, 1959

Card 4/4

✓

18.1141

67668
SOV/126-8-6-16/24

AUTHORS: Doroshek, S.I. and Druzhinin, V.V.

TITLE: Components of Core Losses and Magnetic Permeability of
Dynamo Steel Alloyed with Phosphorus ✓

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 6,
pp 892-895 (USSR)

ABSTRACT: In Soviet-made dynamo steels conforming to GOST 802-58 (types E 11, E 12, E 13, E 21 and E 22) hysteresis accounts for most of the core losses. Doroshek has shown that alloying with phosphorus is known to reduce core losses by increasing grain size and resistivity and changes the gamma-range so that high-temperature treatment can be used (Ref 3). In the present investigations the components of the core losses of dynamo steel (1.8% Si, 0.03% C) containing 0.03, 0.06, 0.12 or 0.36% P were studied. 0.5 mm thick sheets made by forging and hot rolling from 35 kg induction-melted billets, as at the Verkh-Isetskiy works, were used. 250x30x0.5 mm plates, assembled in kg packets were vacuum annealed at 850, 950, 1050 or 1150°C for 4 hours and then cooled in the furnace and tested. Coercive force is shown as functions of phosphorus content in Fig 1 for annealing temperatures of ✓

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67668

SOV/126-8-6-16/24

Components of Core Losses and Magnetic Permeability of Dynamo Steel Alloyed with Phosphorus

850, 950 and 1150°C (curves 1, 2 and 3 respectively); each curve falls with increasing P-content, the slopes of curve 3 being appreciably less than those of the others; for a given P-content the coercive force decreases with increasing temperatures. The number of grams per mm², resistivity, total core losses and its components are shown in Table 1 for 0.03% P steel annealed at 850, 950 and 1150°C. Tables 2 and 3 give corresponding data for different P-contents and annealing temperatures of 850 and 1150°C respectively. Increasing phosphorus content lowers the hysteresis losses on account of increasing grain size, and eddy-current losses on account of increasing resistivity. Fig 2 and 3 show, respectively, the initial and maximal magnetic permeabilities as functions of phosphorus content, for 850, 950, 1050 and 1150°C annealing temperatures (curves 1, 2, 3 and 4, respectively); both permeabilities rise with increasing phosphorus content; in Fig 3 curve 4 lies below curve 3, but otherwise permeability at a given P-content increases with increasing annealing temperature. There are

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67668

SOV/126-8-6-16/24

Components of Core Losses and Magnetic Permeability of Dynamo Steel
Alloyed with Phosphorus

3 figures, 3 tables and 9 Soviet references.

ASSOCIATION: Ural'skiy nauchno-issledovatel'skiy institut chernykh
metallov (Ural Scientific Research Institute for Ferrous
Metals)

Verkh-Isetskiy metallurgicheskiy zavod (Verkh-Isetskiy
Metallurgical Works)

SUBMITTED: June 17, 1959

Card 3/3

DOROSHEK, S.I.

Effect of thickness on the mechanical properties of spring steel.
Stal' 21 no.2:171-172 # '61. (MIRA 14:3)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov.
(Springs (Mechanism))

DOROSHEK, S.I.; TSEYTLIN, A.M.; Prinsipali uchastiye: ZHULAY, A.S., inzh.;
LUKINA, N.P., inzh.; LCSEV, O.I., inzh.

Effect of temper coloring and thermal stabilization on the
properties of spring bands. Stal' 22 no.2:161-162 F '62.

(MIRA 15:2)

1. Ural'skiy nauchno-issledovatel'skiy institut metallov (for
Doroshek, Tseytlin).

(Steel--Heat treatment)

(Springs (Mechanism))

MIRONOV, L.V., kand. tekhn. nauk; YERSHOVA, L.P., inzh.; DOROSHEK, S.I., inzh.;
KOLOV, M.I., inzh.

Effect of carbon on the structure and properties of cold-rolled
transformer steel. Metalloved. i term. obr. met. no.6:6-10 Je '62.

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov
i Magnitogorskiy metallurgicheskiy kombinat.
(Sheet steel—Magnetic properties)

ACCESSION NR: AR4027666

S/0277/64/000/002/0029/0029

SOURCE: RZh. Mashinostroitel'nyye materialy*, konstruksii i raschet detaley mashin, Abs. 2.48.203

AUTHOR: Doroshek, S. I.; Tseytlin, A. M.

TITLE: On the possibility of magnetic control of the tensile strength of a spring strip

CITED SOURCE: Tr. Ural'skogo n.-i. in-ta Chern. met., v. 2, 1963, 211-218

TOPIC TAGS: magnetic control, spring strip, general-purpose coercitimeter, heat treatment, residual austenite, magnetic characteristic, annealing, tensile strength, ultimate strength

TRANSLATION: The author studied the possibility of magnetic control of the tensile strength of a spring strip of 0.32 x 6.75 mm size made out of E1142 steel (composition in %: C-0.70, Si-1.75, Cr-0.3, Mn-0.4) by means of general purpose coercitimeter of the Institute of Metal Physics of the SSSR Academy of Sciences and the effect of heat treatment and thickness on the relationship between the strength and magnetic characteristics of the strip. Magnetic control σ_p of

1/2
Card

ACCESSION NR: ARA027666

the steel band is possible with rigorously constant adherence to heat-treatment technology, providing for a minimum quantity of residual austenite before annealing. The presence of residual austenite in the steel disturbs the relationship between the strength and magnetic characteristics when the annealing temperature is changed, thus limiting the sensitivity of the coercitimeter.

DATE ACQ: 06Mar64

SUB CODE: PH .

ENCL: 00

2/2

Card

ACCESSION NR: AR4042237

S/0124/64/000/006/V078/V078

SOURCE: Ref. zh. Mekhanika, Abs. 6V647

AUTHOR: Doroshek, S. I.; Tseytlin, A. M.

TITLE: Relaxation stability of certain iron-nickel alloys

CITED SOURCE: Sb. Relaksats. yavleniya v met. i splavakh. M., Metallurgizdat, 1963, 326-331

TOPIC TAGS: iron nickel alloy, stress relaxation, relaxation stability

TRANSLATION: Investigates stress relaxation in Ni-Cr-alloy (Ni-Span) and nonmagnetic rust-proof Ni-Cr-Mo-alloy N36KhTYuM after riveting and tempering.

SUB CODE: MM, AS

ENCL: 00

Card 1/1

DOROSHEK, S.I., inzh.; LAPKIN, N.I., inzh.; BOLOTOV, I.Ye.

In the Ural Mountain Scientific Research Institute for Ferrous
Metallurgy. Stal' 23 no.3:252-253, 282 Mr '63. (MIRA 16:5)
(Iron-nickel alloys) (Cast iron--Metallurgy)

I 14475-65 EWT(m)/EWA(d)/EWP(t)/EWP(b) Pad JD/ITA

ACCESSION NR: AP4013100

S/0126/64/017/001/0122/0131

AUTHOR: Doroshek, S. I. B

TITLE: Physical anomalies and ¹⁸properties of age-hardenable alloys of the Invar type ¹⁹

SOURCE: Fizika metallov i metalloved., v. 17, no. 1, 1964, 122-131

TOPIC TAGS: Invar, Invar type alloy, alloy, age hardening, age hardenable alloy, physical property, Iron nickel Invar, Iron nickel titanium alloy, alloy aging, Invar aging, tempering ¹⁴

ABSTRACT: 1) The author discusses some of the results of systematic research into iron-nickel invars alloyed with titanium. Since the information already published regarding this area deals only with dilatometric studies and, consequently, does not provide a complete understanding of the interrelationship between physical anomalies and the alloy properties during the aging process, the author studied: 1) the influence of aging on the physical anomalies and magnetic characteristics of invars; 2) the mechanism of change in Young's modulus during tempering; 3) the relation between the ΔE -effect and the mechanical properties. The author reached the conclusion that in titanium-alloyed age-hardenable invars, as the nickel content increases, the modulus of elasticity and the linear expansion factor decrease to a minimum value and then rise, at the same time that the lattice parameter of

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the solid solution increases to a maximum and then falls. The aging of tempered age-hardenable invars shifts the extreme values of the physical anomalies to the right along the nickel concentration axis, which is explained by the impoverishment of the solid solution due to the separation of the nickel-containing intermetallide. It was also found that the magnetic saturation of the invars studied decreased to a minimum value as a function of temperature; the degree to which this change occurred during aging decreased as the nickel content in the alloy increased. The variation in the coercive force of high-nickel invars during aging is governed by the normal laws; that is, it shows a maximum value as a function of the tempering temperature, while low-nickel invar (34.2%) has a clear minimum at 500C and a maximum at 600C. This complex behavior of low-nickel invars in the tempering process is related to the predominant effect of the change in composition of the solid solution with respect to the growth of stresses at the beginning of the separation of the excess phase. Finally, the author discovered that the elasticity modulus of age-hardenable invars with various nickel contents does not change during the aging process in accordance with any clearly defined law, but that minimum and maximum values are found at different tempering temperatures. Thus, he concludes, the mechanism governing the change in Young's modulus during the tempering of age-hardenable invars is determined by a complex interaction of the stress state (structural factor) with the character of the change in composition of the solid solution (chemical factor) and the position of the alloy along the nickel

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concentration axis with respect to the minimum of the anomaly in Young's modulus
or the maximum of the ΔE -effect (physical factor). Orig. art. has: 7 tables.

ASSOCIATION: URAL'SKIY NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT CHERNYKH METALLOV
(Ural Scientific Research Institute of Ferrous Metals)

SUBMITTED: 16Apr63

ENCL: 00

SUB CODE: MM

NO REF SOV: 009

OTHER: 00

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ACCESSION NR: APL017357

S/0126/64/017/002/0243/0251

AUTHOR: Doroshek, S. I.

TITLE:
The influence of molybdenum on the physical anomalies and properties of dispersion hardened invar type alloys

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 243-251

TOPIC TAGS: invar alloy, dispersion hardening, molybdenum, molybdenum effect, invar physical property, invar magnetic property, invar electric property, invar elastic property, gamma solid solution, coercive force

ABSTRACT: Experiments were performed to determine the effect of molybdenum on the anomalous variation in the coefficient of linear expansion and in Young's modulus of invars, and to study the laws governing the variation of magnetic, electrical, and elastic characteristics during heat treating of these alloys. The invars contained 0.7 - 7.0 % Mo, 34.5 - 52 % Ni, and 2.4% Ti, the last being added to impart aging ability. The results obtained in the studies of the linear expansion and of Young's modulus are presented graphically in Figures 1, 2, and 3

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of the Enclosures. It was also established that the addition of Mo to the dispersion hardened invars resulted in an increase of the specific electrical resistivity, the lattice parameter of the γ -solid solution, the coercive force, and the strength of the alloys. The addition of Mo diminished the magnetic transformation temperature, changed the sign of the temperature coefficient of Young's modulus from positive to negative, and caused a sudden decrease in the physical anomalies. The last phenomenon was reflected in the graphs by the shift of maxima and minima points to the right along the Ni concentration axis. The presence of Mo in invars produced a simultaneous increase in the saturation magnetization and in the coercive force at the stage of overaging. The variation of Young's modulus during tempering was determined by the retarding action of Mo on the process of aging under the K-state conditions. Orig. art. has: 7 tables and 3 figures.

ASSOCIATION: Ural'skiy institut cherny*kh metallov (Ural Institute of Ferrous Metallurgy)

SUBMITTED: 24May63

DATE ACQ: 18Mar64

ENCL: 03

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NO REF SOV: 003

OTHER: 010

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ACCESSION NR: AP4017357

ENCLOSURE; 01

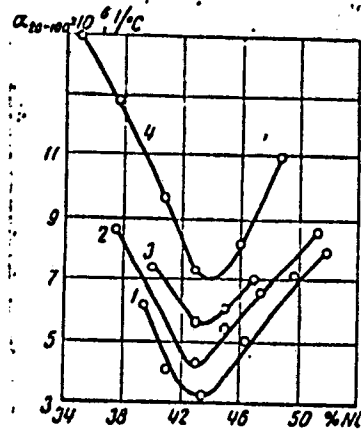


Fig. 1. Relation between the temperature coefficient of linear expansion of invars tempered at 600C and Ni and Co concentration of Ni and Co.

1 - 0.7%; 2 - 2%; 3 - 4%; 4 - 7% Ni.

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ACCESSION NR: AP4017357

ENCLOSURE: 02

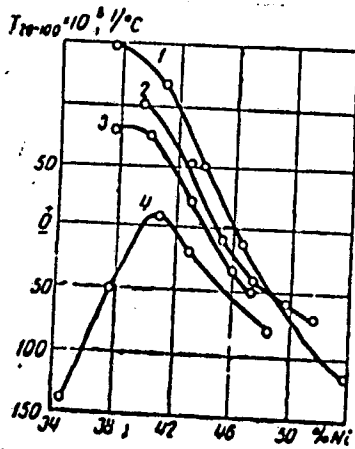


Fig. 2. Variation of temperature coefficient of Young's modulus in alloys tempered at 400C, with respect to Ni and Mo concentration.

1 - 0.7%; 2 - 2%; 3 - 4%; 4 - 7% Mo.

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ACCESSION NR: AP4017357

ENCLOSURE: 03

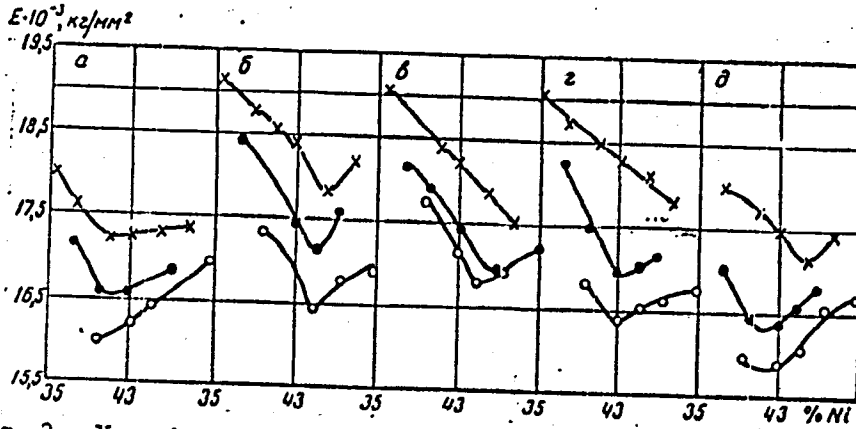


Fig. 3. Young's modulus variation in Mo-containing invars hardened at 1050C and tempered at different temperatures) with respect to Ni and Mo content.

a -- T_{temp} = 400C; б -- 600C; в -- 700C; г -- 800C; д -- T_{hard} = 1050C; о -- 2%; ● -- 4; x -- 7% Mo.

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ACCESSION NR: AP4017374

S/0126/64/017/002/0317/0320

AUTHOR: Doroshek, S. I.

TITLE: Effect of cobalt on mechanical, electrical, and elastic properties of iron-nickel alloys

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 317-320

TOPIC TAGS: iron nickel alloy, cobalt, invar alloy, work hardening, tempering, iron nickel property

ABSTRACT: Experiments were performed to determine the influence of Ni and Co content on the mechanical (σ_B), electrical (ρ) and elastic (E) properties of Fe-Ni alloys, and to study the processes causing the variations in these properties. Figure 1 of the Enclosures shows the relation between the tensile strength and the percentage nickel content of the alloy. The results show that the modulus of elasticity versus nickel-content curves are characterized by the presence of minima, while the curves of Young's modulus and the electrical resistivity curves, including their temperature dependence, are characterized by maxima. Furthermore, the addition of Co to the invar alloys increases the minimum tensile strength,

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decreases the maximum value of ρ , and the minimum value of E , displacing them in the direction of lower nickel content. This sharp shift of the extrema to the left can be explained by the displacement of the $\gamma \rightarrow \alpha$ transformation boundary towards the lower Ni concentrations and by the lowering of the Curie point in the presence of cobalt. Orig. art. has: 2 tables and 2 figures.

ASSOCIATION: Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov
(Ural Scientific Research Institute of Ferrous Metals)

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ACCESSION NR: AP4017374

ENCLOSURE: 01

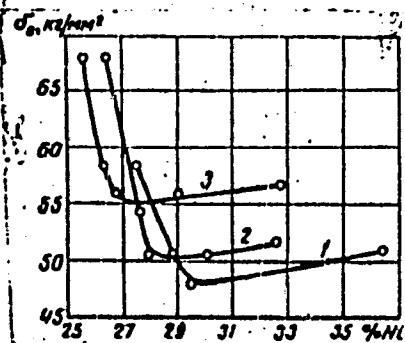


Fig. 1. Tensile strength of Fe-Ni alloys of the Invar type versus Ni and Co content.

1- 2.3; 2- 5.5; 3- 9.3% Co.

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ACCESSION NR: AP1017374

ENCLOSURE: 02

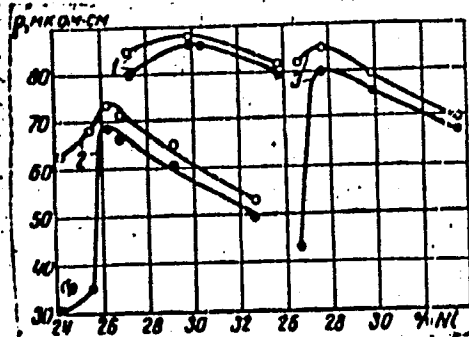


Fig. 2. Variation in electrical resistivity of the alloys with Ni and Co content: after work-hardening 94.5% (dark circles) and tempering at 550C (light circles).

1- 2.3; 2- 5.4; 3- 9.3% Co.

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DOROSHEK, S.I.

Effect of a third element and the structure of invar-type
iron-nickel alloys on the ΔE -effect and their physical
anomalies. Fiz. met. i metalloved. 17 no.4:638-640 Ap '64.
(MIRA 17:8)

1. Ural'skiy institut chernykh metalloov.

ACC NR: AP6036404

SOURCE CODE: UR/0148/66/000/011/0105/0109

AUTHOR: Tseytlin, A. M.; Zubov, V. Ya.; Doroshek, S. I.

ORG: Ural Polytechnic Institute (Ural'skiy politekhnicheskiy institut)

TITLE: Effect of titanium on the physical properties of iron-nickel alloys

SOURCE: IVUZ. Chernaya metallurgiya, no. 11, 1966, 105-109

TOPIC TAGS: iron nickel alloy, titanium, metal physical property, magnetic property, Curie point, Young modulus

ABSTRACT: Anomalies of physical properties in binary invars correspond to the region of concentrations adjoining the boundary of irreversible $\gamma - \beta$ transformation. It has been shown (S. I. Doroshek. FMM, 1964, t. 17, vyp. 14, s. 638) that in certain cases a relationship exists between the effect of alloy elements on the stability of austenite and the position of the anomalies. In this connection, the authors investigate the variation in the concentration dependencies of a number of the physical characteristics of invars under the influence of titanium, which is widely employed as a hardening additive in alloys with special elastic properties. Since under conditions of dispersion hardening the influence of titanium on such anomalies

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UDC: 669.15-194.24-12-18:539.26:669.295

ACC NR: AP6036404

is largely determined by the change in the composition of the solid solution with segregation or dissolution of the excess intermetallic compound, single-phase Fe-Ni-Ti alloys (30-46 wt. % Ni; 0.6, 2.2 and 4% Ti plus 0.02-0.05% each of C, Mn, Si, Al, Cr, Co, P, S, with Fe as the remainder) in deformed and recrystallized state were investigated. Measurements of physical properties (Young's modulus, temperature variation, Curie point) were performed on specimens of 5 mm diameter. The lattice parameter of the γ -solid solution was measured by the ionization method on recording the line (311); the presence of the α -phase was fixed according to the line (211). Findings: the Curie point falls with increasing content of Ti (Fig. 1) and hence

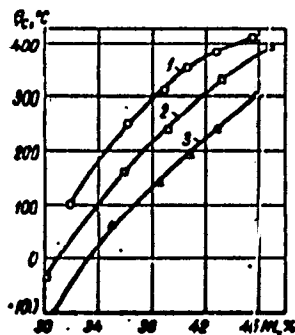


Fig. 1. Effect of Ti on Curie point

1 - 0.6% Ti; 2 - 2.2% Ti; 3 - 4% Ti

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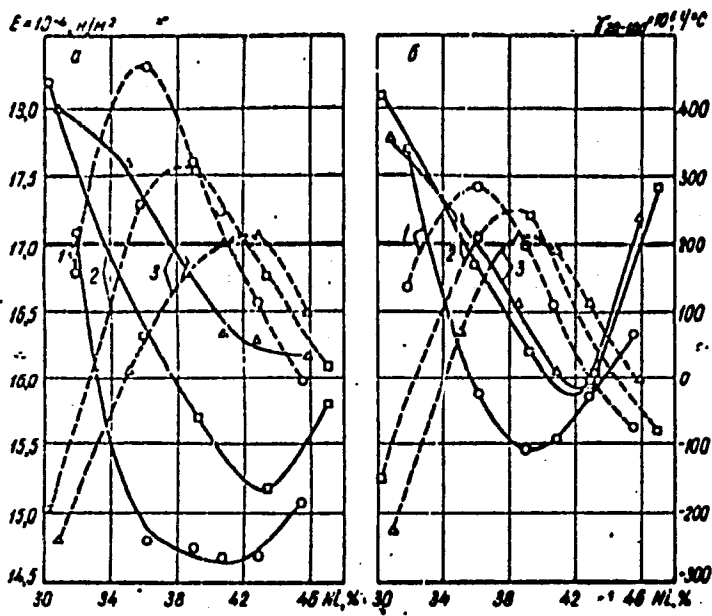


Fig. 2. Concentration dependences of Young's modulus E and its temperature coefficient γ in Fe-Ni-Ti alloys following quenching from 1000°C (a) and 22% deformation (b): 1 - 0.6% Ti; 2 - 2.2% Ti; 3 - 4% Ti; — for E ; - - - for γ

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ACC NR: AP6036404

Fe-Ni-Ti alloys must have a higher Ni content in order to display the same ferromagnetic properties as binary invars. Ti weakens the elastic anomaly associated with strictional changes in the dimensions of ferromagnetics at temperatures below the Curie point. Thus an increase in Ti content leads to an appreciable rightward shift of Young's modulus E and of the maximum of the thermoelastic coefficient γ in recrystallized state (Fig. 2). Since the addition of Ti reduces the Curie point and magnetization saturation, it also must reduce the linear magnetostriction (proportional to the square of magnetization); this apparently accounts for the partial elimination of elastic anomaly under the influence of Ti; this also accounts for the anomaly of the lattice parameter. Orig. art. has: 3 figures.

SUB CODE: 11, 20/ SUBM DATE: 02Apr66/ ORIG REF: 005/ OTH REF: 005

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