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SOV/126-8-5-19/29

Hot-Rolled Transformer Steel with Low Specific Losses

metallographically. The number of non-metallic inclusions was determined on unetched sections by counting. The average number of non-metallic inclusions per square millimetre of the section surface determined at a magnification of X 600 was taken as the criterion. The non-metallic inclusions observed in separate strips can be divided into four different types: (1) globular silicate inclusions (simple and complex silicates - SiO_2 , 2FeOSiO_2 , M_2OSiO_2 , $n\text{FeO} \cdot m\text{MnO} \cdot p\text{SiO}_2$); (2) finely dispersed acute-angular or square inclusions of titanium carbonitrides, $\text{Ti}(\text{CN})$; (3) sulphide inclusions FeS , MnS ; and (4) acute-angular inclusions rich in aluminium oxide - Al_2O_3 , $\text{Al}_2\text{O}_3 \cdot \text{SiO}_2$, $\text{Al}_2\text{O}_3 \cdot \text{FeO}$. In Table 3 the results of the determination of the total quantity of non-metallic inclusions in the microsections, their types and dimensions are shown. In order to expose the grains the sections were etched in a 4% nitric acid solution in alcohol. Data on the number of grains per square millimetre of the investigated specimens are shown in Table 3. The grain boundaries in steel of specific ✓

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loss of 0.75 watt/kg are straight, and very dark (Fig 1). In steel with a specific loss $P_{10/50}$ of 0.83 watt/kg individual grains with curved boundaries can be seen together with a considerable quantity of straight-boundary grains (Fig 2). As the specific loss increases so the curvature of the grain boundaries increases. Fig 3 shows grains of steel with a specific loss $P_{10/50}$ of 0.95 (a) and 1.26 (b) watt/kg. Supplementary to the metallographic investigation three specimens of steel with low (Nr 1), medium (Nr 10) and high (Nr 16) specific losses were submitted to an electron-microscopic study. After polishing the specimens in the plane of the sheet they were etched in a 4% nitric acid solution in alcohol for 30 seconds, and quartz replicas were made by depositing quartz in vacuum. The replicas were inspected with an EM-3 electron microscope at a magnification of X 20 000. The author arrives at the following conclusions: Hot-rolled transformer steel with specific losses $P_{10/50}$ of 0.75-0.85 watt/kg as compared with steel possessing high losses is

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characterized by the following features: 1) coarse ferrite grains (6 to 10 grains per mm²) with essentially straight boundaries; 2) the grain boundaries in the majority of cases did not exhibit precipitates of an extraneous phase; 3) a small quantity of non-metallic inclusions; and 4) essentially few Al₂O₃ inclusions and a low chemical impurity content of sulphur, nitrogen and aluminium. There are 4 figures and 3 tables.

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SUBMITTED: March 14, 1959

SUCHIL'NIKOV, S.I., kand.tekhn.nauk; DUBROV, N.P., kand.tekhn.nauk

Perfect the design of electric arc furnaces and improve the
quality of electrical steel. Trudy Ural.politekh.inst. no.75:
133-141 '59. (NIIRA 13:4)
(Electric furnaces) (Steel--Electrometallurgy)

0.0000

77452

SOV/133-60-1-15/30

AUTHOR: Dubrov, N. F. (Candidate of Technical Sciences)

TITLE: From the Investigations at Plant Laboratories and Institutes in 1959. At the Ural Scientific Research Institute of Ferrous Metals (Ural'skiy Nauchno-Issledovatel'skiy Institut Chernykh Metallov). Information and Current Events

PERIODICAL: Stal', 1960, Nr 1, p 44 (USSR)

ABSTRACT: (1) Casting of rimmed steel into bottle-shaped molds for telegraph wire production. In collaboration with Revda Plant (Revdinskiy zavod). At Revda Hardware-Metallurgical Plant (Revdinskiy metizno-metallurgicheskiy zavod) 120-ton melts of rimmed steel used for telegraph wires were cast into 250-kg ingots. It was necessary to provide caps for 450-470 ingots; the ingot growth had to be trimmed off before the beginning of rolling. Therefore, experiments were conducted of pouring rimmed steel into bottle-shaped molds. Two types of steel were used;

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From the Investigations at Plant Laboratories
and Institutes in 1959

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one with a content of 0.06% carbon and 0.25% manganese, and another with a content of 0.14-0.20% carbon and 0.40% manganese. Adaptation of bottle-shaped molds showed the following advantages: (a) The surface of an ingot comes out clean, mold cleaning becomes unnecessary (in the process of pouring, the steel does not rim, and no spatter sticks to the mold interior), no caps are needed since the molds are plugged after steel is poured. (b) With the reduction of metal trim, the amount of usable steel is increased by 4-8.5%, resulting in saving of approximately 17 rubles per ton of steel. (2) Adaptation of light-weight refractory clay for lining of extension pieces. In collaboration with Combine imeni A. K. Serov (Kombinat imeni A. K. Serova). The use of light-weight refractory clay for lining of the extension pieces (weight 1.5 g/cm³) has permitted reduction of metal trimming of ingots by 2-3%. Life of such extension pieces, carefully built and with a good coating of refractory clay, is 18-20 melts, similar to that of extensions lined with the standard-weight chamotte. At Combine imeni A. K. Serov, adaptation of extension

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pieces lined with light-weight refractory clay for
casting carbon and ball-bearings steel ingots has
reduced the head trimming and rejects due to poor
macrostructure (particularly at shrinkage, from 0.7-1.0%
to 0.3%.

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77454
SOV/133-60-1-15/30

AUTHOR: Dubrov, N. F. (Candidate of Technical Sciences)

TITLE: From the Investigations at Plant Laboratories and Institutes in 1959. At the Ural Scientific Research Institute of Ferrous Metals (Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov)

PERIODICAL: Stal', 1960, Nr 1, p 50 (USSR)

ABSTRACT: (1) The development of production technology of iron-aluminum alloy, with a high magnetic permeability. A technology has been developed, of hot pack rolling and of heat treatment, of "al'fenol" (Yu 16), an iron-aluminum alloy, processed in sheets 0.35 (0.20) x 600 x 1,200 mm, and with an initial magnetic permeability of 30,000-40,000 gauss/oersteds at the coercive force of 0.005 oersted. Such an alloy is of high electrical resistance (1.45 ohm x mm²/m) and also wear and corrosion resistance. After melting in 100-kg

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induction furnaces and being poured into chill molds, the alloy is then pack-rolled at the mills of Verkh Iset' Plant (Verkh-Iset'skiy zavod) with the following heat treatment: short annealing at 900-950° C, then furnace cooling to 500-650° C, with an oil or water quenching from this temperature. (2) Investigations of smelting and heat treatment processes of soft magnetic alloys. The influences of single, double, or triple remelting in a vacuum arc furnace with a consumable electrode on the magnetic properties of alloys 50N and 79N5M were investigated. The triple remelting in vacuum increases the magnetic permeability 1.5-2 times, and also decreases the coercive force of alloy 50N. The influence of vacuum melting in an arc furnace on the magnetic properties of alloy 79N5M depends greatly on the subsequent heat treatment (annealing temperatures). Also investigated were the influence of annealing temperatures (from 1,000° to 1,400° C)

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and holding and cooling rates of the magnetic properties of 50N and 79N5M melted in an open induction furnace and remelted in a vacuum arc furnace with a consumable electrode, and of the soft magnetic alloys remelted in a vacuum arc furnace. A maximum magnetic permeability is obtained after annealing at lower temperatures (1,200-1,250° C) as compared to those annealed at 1,300-1,330° C.

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18.5100,18.7400

77461
SOV/133-60-1-22/30

AUTHOR: Dubrov, N. F. (Candidate of Technical Sciences)

TITLE: From Investigations of Plant Laboratories and Institutes in 1959. At the Ural Scientific Research Institute of Ferrous Metals (Ural'skiy nauchno-issledo-vatel'skiy institut chernykh metallov)

PERIODICAL: Stal', 1960, Nr 1, p 70 (USSR)

ABSTRACT: Investigations of conditions leading to formation, and of methods decreasing variations in the thickness of strips produced by cold rolling in collaboration with Magnitogorsk Combine (Magnitogorsky kombinat) New theoretical basic methods were developed, with rolls preliminarily set, and with a special profile, considerably increasing the precision of the strip

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From Investigations of Plant Laboratories
and Institutes in 1959. At the ural Sci-
entific Research Institute of Ferrous
Metals (Ural'skiy nauchno-issledovatel'skiy) Institut
chernykh metallov)

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thickness. Results of laboratory and industrial experiments on sheet mill 1,200 have proved that through an increase in strip tensions to 0.70 - 0.75 of ultimate strength any corrugation or warping of rolled strips is eliminated. Development in technology of enameling of steel pipes, to replace pipes made of alloy steel and of nonferrous metals in collaboration with Pervoural'sk Starotrubnyy Plant (Pervoural'skiy starotrubnyy zavod). A technology has been developed to prepare pipe surfaces for an enameling and baking process, and also to prevent warping of enameled pipes. A special installation is used enabling enamel lining while changing the pipe angle of slope to a horizontal position, and while preserving its continuous rotation.

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From Investigations of Plant Laboratories
and Institutes in 1959. At the Ural Sci-
entific Research Institute of Ferrous
Metals (Ural'skiy nauchno-issledovatel'skiy
institut chernykh metallov)

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SOV/13 60-1-22/30

The rates of feed for enamel lining, of pipe rotation, and also the setting of the pipe angle of slope are established. After the enameled pipes are dried and baked in electric furnaces, they are cooled by being placed on continuously rotating rollers, thus correcting any warping and eliminating sagging that has occurred during their baking period. An experimental batch, 2-2.3 m in length, with a satisfactory enamel coating, was manufactured at a semi-industrial installation.

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S/133/60/000/007/012/016

AUTHORS: Dubrov, N.F.; Gorlach, I.A.; Lyasko, M.V.TITLE: The Effect^{1/2} of Copper on Transformer Steel^{1/2}

PERIODICAL: Stal', 1960, No. 7, pp. 645 - 646 ✓

TEXT: According to the work of V.S. Mes'kin (Ref. 1) it can be assumed that a maximum copper content of 0.6% has no adverse effect on the electrical and magnetic properties of transformer steel, assuming that this quantity of copper is contained as a solid solution in ferrosilicon. Higher demands led to the conclusion that the permissible copper content of transformer steel must not exceed 0.10%. In order to establish unambiguously the effect of copper on transformer steel, tests were carried out on three types of steel of the following composition:

	Si	C	Mn	P	S	Cr	Cu	N ₂
A (A)	4.66	0.04	0.01	0.008	0.002	0.010	0.059	0.0017
B (B)	4.69	0.02	0.03	0.010	0.006	0.070	0.310	0.0018
B (V)	4.59	0.03	0.04	0.009	0.003	0.030	0.046	0.0050

Steel A and B were melted in a 300 kg induction furnace and steel V in a 500

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The Effect of Copper on Transformer Steel

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kg arc furnaces. From these steels sheets were rolled 0.35 mm thick, which were tempered at 1,120°C in industrial vacuum furnaces (with a residual pressure of 60 mm Hg). From the sheets 30 x 250 mm strips were cut which were tested by the absolute wattmeter method, according to GOST (GOST) 802-50 for specific loss ($P_{10/50}$), and by ballistic method for magnetic induction in weak and medium fields. Magnetic induction was apparently most affected by copper in weak fields (between $B_{0.002}$ and B_1). Specimens of various copper content in medium magnetic fields ($B_5 - B_{25}$) practically did not show any change in magnetic induction. Copper has an effect on specific losses when the Cu content exceeds 0.3% and this influence is very considerable when the Cu content is above 0.5%. Judging from the tests it can be assumed that the separation of Cu from ferrosilicon starts already when its amount is well below 0.6%. When examining non-metallic inclusions in many samples, on the boundary of the inclusion cores complex iron sulfides and copper sulfides were observed; the latter most probably formed as a result of the $2\text{Cu} + \text{FeS} \rightleftharpoons \text{Cu}_2\text{S} + \text{Fe}$ reaction (1). At high temperature (1,120 - 1,150°C) annealing in the vacuum the reaction should proceed to the right as at 1,100°C: $-\Delta F_{\text{FeS}}^0 = 11,930 \text{ cal}$ (2) and $-\Delta F_{\text{Cu}_2\text{S}}^0 = 20,070 \text{ cal}$ (3). Consequently, copper separates from the ferrosilicon solution in the form of Cu_2S . Upon the sep-

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The Effect of Copper on Transformer Steel

S/133/60/000/007/012/016

ation of copper in pure form or in the form of sulfurous compounds, heterogeneous mixtures are formed which deteriorate the electric and magnetic properties of transformer steel. It is advisable, therefore, to keep the maximum copper content below 0.20% in steels which are standardized for magnetic induction and below 0.40% in steels which are standardized for specific losses. When used in fields of 0.008 a.t./cm capacity or less, transformer steel should apparently not contain any copper at all; even a quantity of 0.2% is inadmissible. There are 3 graphs, 2 sets of photographs and 4 references: 2 Soviet and 2 German.

ASSOCIATION: Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov
(Ural Scientific Research Institute of Iron and Steel)

Card 3/3

DUB.CV, P.T., kand.tekhn.nauk; MERONOV, L.V., inzh.; KOLEV, P.I., inzh.

Annealing cold-rolled electrical steel continuous action furnaces.
Stal' 20 no.6:543-547 Ja '60.
(MIRA 14:2)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov
i Magnitogorskiy metallurgicheskiy kombinat.
(Annealing of metals)

DUBROV, N.F.; GORLACH, I.A.; LIASKO, M.V.

Effect of copper on electrical steel. Stal' 20 no. 7:645-646
J1 '60. (MIRA 14:5)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov.
(Steel--Magnetic properties) (Copper)

BURDAKOV, Dmitriy Dmitriyevich; TSUKERNIK, Zinoviy Grigor'yevich; YEL'KIN, S.A., inzh., retsenzent; ROMANOV, A.A., kand. tekhn. nauk, retsenzent; BENYAKOVSKIY, M.A., inzh., retsenzent; GOL'DSETEYN, M.I., kand. tekhn. nauk, retsenzent; DUBROV, N.F., nauchnyy red.; SYRCHINA, M.M., red. izd-va; KRYZHOVA, M.L., red. izd-va; TURKINA, Ye.D., tekhn. red.

[Metallurgy of ferrous metals; manual for the training of skilled workers in industry] Metallurgiya chernykh metallov; uchebnoe posobie dlia podgotovki kvalifitsirovannykh rabochikh na proizvodstve. Sverdlovsk, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 437 p. (MIRA 14:11)
(Iron-Metallurgy) (Steel-Metallurgy) (Metalwork)

S/133/61/000/005/001/009
A033/A133

AUTHORS: Dubrov, N.F.; Gorlach, I.A.; Privalov, S.S.

TITLE: At the Zhdanovskiy metallurgicheskiy institut (Zhdanov Metallurgical Institute). Investigating the smelting process of transformer steel in the electric furnace [in cooperation with the Chelyabinskiy i Verkh-Isetskiy metallurgicheskiy zavod (Chelyabinsk and Verkh-Isetsk Metallurgical Plants)]

PERIODICAL: Stal', no. 5, 1961, 403

TEXT: The technological conditions of obtaining transformer steel with a minimum of impurities have been investigated. Adding to the charge up to 6% iron ore and up to 3% lime (of the weight of the metal charge) ensures an Mn-content not exceeding 0.10% and a Cr-content of 0.003%. The reduction of the Mn-content in the metal is accompanied by an increase of the coefficient of chromium distribution between slag and metal. To decrease the C-content to 0.03 - 0.04% it is necessary to blow through the bath with pure oxygen not containing nitrogen and moisture. A rapid reduction of the sulfur content of steel can be achieved by alloying the metal with silicon at the beginning of the refining period, by the

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At the Zhdanovskiy metallurgicheskiy institut...

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presence of liquid foamy slag containing not more than 1.5 - 2.0% FeO in the bath prior to tapping, and by an intensive stirring of the metal with the slag during the pouring of the melt into the ladle. During the silicon-alloying of the melt at the beginning of the refining period, the nitrogen content of the steel does not exceed 0.005 - 0.007% which increases to 0.007 - 0.010% during alloying at the end of this period. The utilization of magnesium-silicon for the final de-oxidation contributes to a decrease in the oxygen content by 15 - 20%. [Abstracter's note: Essentially complete translation].

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S/196/61/000/011/005/042
E194/E155

AUTHORS: Sheftel', N.I., Dubrov, N.F., Mironov, L.V., and Kolov, M.I.

TITLE: Coiled lightly-textured electrical steel of good magnetic properties

PERIODICAL: Referativnyy zhurnal, Elektrotehnika i energetika, no.11, 1961, 2, abstract 11B 6. (Vestn. elektroprom-sti, no.6, 1961, 69-73)

TEXT: Cold-rolled lightly-textured electrical steel has a number of advantages over hot-rolled. It can be produced not only in sheets but in coils, which ensures high uniformity of properties and allows the manufacturing processes to be mechanised and automated both in the actual production of the steel and in its application. The object of the work was to improve the properties of the coiled material. Particular attention was paid to reducing the specific losses whilst maintaining the required magnetic induction and plasticity. The specific losses may be reduced by increasing the content of Si and reducing that of C, by reducing the sheet thickness and by using cold-rolling and
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Coiled lightly-textured electrical ...

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E194/E155

heat-treatment conditions that promote grain growth. High-temperature annealing was specially studied because of possible reduction in grain size of sheet steel with an Si content of 2% during the α - γ phase conversion at a temperature of 950-1000 °C. Investigations were made on cold-rolled steel strip of 0.5 and 0.35 mm thickness containing 0.05-0.01% C. Part of the strip was decarburised by annealing in a gas-hood furnace. After rolling with various degrees of reduction the strips were annealed in transfer furnaces and batchwise in hood-type furnaces with hydrogen atmosphere and in vacuum. In both cases the highest grade of steel (\geq 3100 (E 3100)) could be obtained only with a C content of less than 0.02%. In the transfer furnace the best magnetic properties were obtained by annealing below the phase-conversion temperature. With annealing in hood-type furnaces the specific losses are lower than with transfer furnaces; the best result is obtained by annealing at 1150 °C. The lowest losses are obtained with a reduction of 5-8% in the second rolling after intermediate annealing (this is the critical reduction for electrical sheet steel). By reducing the sheet thickness from 0.5 to 0.35 mm the

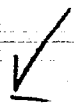
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Coiled lightly-textured electrical .. S/196/61/000/011/005/042
E194/E155

specific losses are reduced, particularly when the Si content
is increased to 2.2-2.3%.
2 literature references.

[Abstractor's note: Complete translation.]

Card 3/3



DUBROV, N.F.; GOL'DSHTEYN, M.I.; GUTERMAN, S.G.; Prinsipal' uchastiyes
GORLACH, I.A.; LAZAREV, E.M.

Effect of manganese on the phase constitution of electrical
silicon steels. Fiz. met. metalloved. 11 no.6:919-922 Je '61.
(MIRA14:6)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov.
(Steel—Metallography)
(Manganese)

POFANOV, A.A., kand. tekhn. nauk; GAVRILYUK, L.Ya., inzh.; DUBROV, N.F.;
GORLACH, I.A.; PRIVALOV, S.S.

New developments in research. Stal' 21 no.5, 402-403, 414 My '61.
(MIRA 14:5)

(Ural Mountains—Metallurgical furnaces)
(Zhdanov—Blast furnaces)

SHEFTEL', M.I., kand.tekhn.nauk; DUBROV, M.F., kand.tekhn.nauk; MIRNOV,
L.V., inzh.; KOLOV, M.I., inzh.

Rolled low-texturized electric engineering steel with high
magnetic properties. Vest. elektroprov. 32 no.6:69-73 Je
'61. (MIRA 16:7)
(Steel--Magnetic properties)

DUBROV, N.F., kand.tekhn.nauk; GOL'DSHTEYN, M.I., kand.tekhn.nauk;
GUTERMAN, S.G., kand.tekhn.nauk

Effect of phase constitution of electrical steels on the formation
of "ragged edges." Stal' 21 no.10:934-938 0 '61. (MIRA 14:10)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov.
(Steel--Metallography)
(Phase rule and equilibrium)

MIRONOV, L.V.; DUBROV, N.F.; GUTERMAN, S.G.; GOL'DSHEYN, M.I.;
SMIRNOV, N.S., red.; CHAPAYKINA, F.K., red. izd-va; KOROL',
V.P., tekhn. red.

[Phase transformations and properties of electrical steel] Fazovye prevrashcheniia i svoistva elektrotekhnicheskikh stali. Sverdlovsk, Metallurgizdat, 1962. 34 p. (MIRA 15:12)
(Steel alloys--Magnetic properties)
(Phase rule and equilibrium)

S/133/62/000/007/012/014
A054/A127

AUTHORS: Dubrov, N.F.; Mironov, L.V.; Koksharova, I.K.

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

PERIODICAL: Stal', no. 7, 1962, 638

TEXT: If they have a cubic texture, thin (0.05 - 0.08 mm) transformer steel sheets show a higher magnetic permeability and coercive force than those with a ribbed texture. To establish the factors affecting the formation of a cubic texture, tests were carried out covering the conditions of reduction, the number of passes, the temperature of intermediate annealing, the temperature and media of final annealing for sheets 0.05 - 0.3 mm thick. The steels tested contained 3% Si, the sheets were rolled from slabs 2.5, 4.5 and 6.5 mm thick. A cubic arrangement of the grains could be obtained during the final annealing, after cold rolling with high temperature intermediate annealing (950 - 1,100°C). At lower (750 - 850°C) temperatures during intermediate annealing the grains followed a ribbed or a mixed pattern. In strips 0.20 - 0.30 mm thick a cubic

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At the Ural'skiy nauchno-issledovatel'skiy

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A054/A127

texture develops after three passes and reductions of 65 - 75% in each pass; application of two passes required the reduction to be increased to 80 - 83%, whereas for strips 0.05 - 0.1 mm thick, rolled 4 - 5 times, reduction could be decreased to 50 - 60%, to obtain the same effect. Strips 0.15, 0.20 and 0.30 - 0.35 mm thick should be rolled from slabs 3.0 - 3.5, 6 - 8 mm thick, respectively. The formation of the cubic texture can be promoted by annealing in a medium of dry hydrogen (dew point 60 - 70°C), or in deep vacuum (10^{-4} mm Hg). After vacuum annealing at 1,200°C, 0.05 - 0.08 mm thick steel sheets with a cubic texture displayed a magnetic permeability (μ_0, μ_{max}) of 2 - 3.5 and 30 - 36 thousand gauss/oersted and a coercive force of 0.17 + 0.23 oersted; these values are 2 - 3 times higher than in sheets having a ribbed texture. 0.20 - 0.30 mm thick strips had, after three passes and two high-temperature intermediate annealings with final annealing at 1,150°C a cubic texture up to 50% and ribbed texture to 20 - 25%. The magnetic induction values (longitudinally and transversally to rolling) were 18,250 and 16,300 gauss, respectively, whereas the corresponding values for ribbed texture were 18,300 and 14,300 gauss, respectively.

Card 2/2

KHOEV, V.N.; BARANOVA, N.A.; GOBLACH, I.A.; KVASOV, Ye.I.; KRAMARENKO, I.S.;
MIRONOV, L.V.; PRIVALOV, S.S.; LYASKO, M.V.; ~~DUBROV, N.F.~~;
MIRONOV, L.V.; KOKSHAROVA, I.K.; MIKHALEV, M.S.; LAZAREV, E.M.;
KUZNETSOVA, I.R.; LAPIN, N.Y.; KRASIL'NIKOV, N.A.; GOL'DSHTEYN, M.I.;
GUTERMAN, S.G.; ODINOKOV, Yu.I.; SKRYABIN, N.P.; KORSHCHIKOV, V.D.

Research by the Ural Ferrrous Metal Research Institute. Stal'
no. 7: 621, 623, 638-639, 670 J1 '62. (MIRA 15:7)
(Metallurgical research)

DUBROV, N.F.; GORLACH, I.A.; PRIVALOV, S.S.; SHAYEVICH, A.B.; SHUBINA, S.B.

At the Urals Research Institute of Ferrous Metals. Stal' 22
no.9:812, 854 S '62. (MIRA 15:11)
(Ural Mountain region--Metallurgical research)

DUBROV, Nikolay Fedorovich; LAPKIN, Nikolay Iosifovich. Prinsipal
uchastiye ZASUKHA, P.F.; KOROBEKA, B.A., retsentsent;
MIRONOV, Leonard Vladimirovich; KRIZHOVA, M.L., red. izd-va;
BEKKER, O.G., tekhn. red.

[Electrical steels] Elektrotekhnicheskie stali. Moskva, Metal-
lurgizdat, 1963. 383 p. (MIRA 16:7)
(Steel—Magnetic properties)

DUBROV, M.F.; KITAYEV, B.I.; KOKAROV, N.I.; UDOVENKO, V.G.; KONDRAT'YEV, S.N.;
ZATULOVSKAYA, Ye.Z.; KLYUCHEROV, A.P.

Review of the book by N.A. Vecher "Highly efficient operation of
open-hearth furnaces." Stal' 24 no.7:613-614 J1 '64.

(MIRA 18:1)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov,
Ural'skiy politekhnicheskiy institut i Nizhne-Tagil'skiy metallurgi-
cheskiy kombinat.

ARNAUTOV, V.T.; BARANOV, V.M.; DONSKOY, S.A.; PASTUKHOV, A.I.; SMIRNOV, L.A.; TORSHILOV, Yu.V.; TRET'YAKOV, M.A.; UDOVENKO, V.G.; FREYFENZON, Ye.Z.; SHCHEKALEV, Yu.S.; Prinimali uchastiye: MAKAYEV, S.V.; KOMPANIYETS, G.M.; NAGOVITSYN, D.F.; NOVOLODSKIY, P.I.; VARSHAVSKIY, V.L.; KOROGODSKIY, V.G.; KLIBANOV, Ye.L.; MEDVEDEVSKIKH, Yu.; TALANTSEVA, T.I.; DUBROV, N.E.; DZEMYAN, S.K.; TOPYCHKANOV, B.I.; CHARUSHNIKOV, O.A.; KHARITONOV, Yu.A.

Developing and mastering the technology of converting vanadium cast iron in oxygen-blown converters with a 100 ton (Mg) capacity. Stal' 25 no.6:504-508 Je '65. (MIRA 18:6)

1. Nizhne-Yagil'skiy metallurgicheskiy kombinat (for Makayev, Kompaniyets, Nagovitsyn, Novolodskiy, Varshavskiy, Korogodskiy, Klibanov, Medvedevskikh, Talantseva). 2. Ural'skiy nauchno-issledovatel'skiy institut chenykh metallov (for Dubrov, Dzemyan, Topychkanov, Charushnikov, Kharitonov).

ZAKHAROV, A.F.; VECHER, N.A.; LEKONTSEV, A.N.; RUDNITSKIY, P.M.;
TSIMBALENKO, L.N.; TSUKERNIK, Z.G.; ARYASOV, N.I., inzh.,
ratsenent; DOVGOPOL, V.I., red.; DUBROV, N.F., red.;
GETLING, Yu., red.

[Vanadium of the Kachkanar deposit] Kachkanarskiy vanadii.
Sverdlovsk, Sredne-Ural'skoe knizhnoe izd-vo, 1964. 302 p.
(MIRA 18:11)

KOKUSHKIN, D.P.; FREYDENZON, Ye.Z.; KOMPANIYETS, I.A.; SHMONIN, G.M.; LEBEDEV, A.A.; ZATULOVSKAYA, Ye.Z.; Prinnimani uchastiye: DUBROV, N.E.; PASTUKHOV, A.I.; ISAYEV, N.I.; STAROSELETSKIY, M.I.; AKSEL'ROD, L.M.

Improving the quality of a faceted ingot by changing the shape of its side surfaces. Stal' 25 no.7:610-612 JI '65. (MIRA 18:7)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov i Nizhno-Tagil'skiy metallurgicheskiy kombinat.

ACC NR: AR6033857 SOURCE CODE: UR/0196/65/000/008/V006/V006

AUTHOR: Shevel', S. S.; Dubrov, N. S.

TITLE: Instrument for the continuous measurement and adjustment of ultraviolet radiation intensity *qm*

SOURCE: Ref. zh. Elektrotehnika i energetika, Abs. 8V26

REF SOURCE: Sb. Mekhaniz. i elektrifik. s. kh. Kiyev, Urozhay, 1965, 142-143

TOPIC TAGS: uv radiation, radiation intensity, uv radiation measurement, microammeter, photoresistor

ABSTRACT: The instrument for measuring and adjusting the radiation intensity of uv sources consists of an a-c generator (100 Kc), a differential measuring bridge, an indicator, a microammeter, a relay, pickups (diodes), and two photoresistors using light filters. A 4.5 v KBS-05 battery serves as the power source. The rectified voltage is transmitted through opposite connected diodes to the photoresistor in such a manner that current difference passes through the indicator. When the conductivity of the photoresistors is equal, the indicator has no current.

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UDC: 535.243

ACC NR: AR6033857

However, if one of the photoresistors is irradiated, its conductivity increases and a current proportionate to the radiant flux flows through the microammeter and the relay. When irradiation increases above a given value, the relay contacts used in the corresponding switching circuit operate and source voltage decreases. The instrument can also be used for measurements in the visible region of the spectrum. Suitable light filters are used for this purpose. One illustration.
G. L'vina. [Translation of abstract]

SUB CODE: 09/

Card 2/2

ZAYTSEV, I.F.; DUBROV, N.S.; TSAREVSKIY, A.F.; ZASIMOVICH, Yu.P.; MAMCHITS, G.I.

Automation of the process for determining the moisture of the charge. Koks i khim. no.8:16-17 '62. (MIRA 17:2)

1. Ukrainskiy proyektno-konstruktorskiy i nauchno-issledovatel'skiy institut po obogashcheniyu i briktirovaniyu ugley (for Zaytsev, Dubrov, TSarevskiy). 2. Kommunarskiy koksokhimicheskiy zavod (for Zaslomovich, Mamchits).

DUBROV, N. S.; ZAYTSEV, I. P.

The FV-5 portable hygrometer. Fribocestroenie no.12:25-26
D '62. (MIRA 16:1)

(Hygrometry)

DUBROV, N.S.; ZAYTSEV, I.F.

Portable device for operational control of coal moisture.
Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekh.
inform. 17 no. 5:41-42 My '64. (MIRA 17:6)

DRUZ'YEV, A.; DUBNOV, S., gornyy inzh.; SHEKHOVTSOV, A.; SKOGOREV, V.

Developing the initiative of Nikolai Masai and Aleksandr Kol'chik.
Sots.trud 4 no.3:97-105 №. '59.

(MIRA 12:4)

1. Nachal'nik otdela organizatsii truda i zarabotnoy platy tresta "Krasnodonugol'" (for Druz'yev). 2. Nachal'nik otdela organizatsii truda tresta "Kuybyshevugol'" (for Shekhovtsov). 3. Pomoshchnik glavnogo inzhenera po organizatsii truda shakhtoupravleniya "Proletar" (for Skogorev).

(Coal mines and mining)
(Labor productivity)

PODOBEDOV, V.V., inzh.; DUBROV, S.Ya., inzh.; SOLOV'YEV, M.Ye., inzh.;
YEDAKOV, V.M., inzh.; KNYAZHANSKAYA, Ye.I., inzh.

Use of the twin drift mining system. Ugol'.prom. no.1:29-34
Ja-F '62. (MIRA 15:8)

1. Normativno-issledovatel'skaya stantsiya Chistyakovskogo tresta
predpriyatij ugol'noy promyshlennosti Donbassa Ministerstva
ugol'noy promyshlennosti SSSR.
(Coal mines and mining)

NAVROTSKIY, I.V., insh.; TOMENKO, Yu.S., insh.; GOLIK, V.R., insh.;
DUBROV, V.A., insh.

Investigating the occurrence and spreading of cracks under
the effect of repeated impact stress. Trudy Ukr.nauch.-issl.
inst.met. no.5:237-248 '59. (MIRA 13:1)
(Metals-Fatigue) (Crystal lattices)

DUBROV, V. A.

FRASE I NOSE RUTCHENKON 807/5305

Research. Institute steel
Bolshevikovye yuzhnykh v metallurgii i shtal'makh; Izdatel'stvo Mashinostroyeniya
Moskva (Moscow Institute of Machine Building and Alloy Technology of the
Academy of Sciences), Moscow, Metallurgicheskii, 1960, 308 p.

Sponsoring Agency: Ministerstvo Vyzhivaniya i razvitiya shtal'mov i spetsial'nykh
metallov i metallovodstva (Ministry of Steel and Special Metals Development)
M.: A.I. Izdatel'stvo, 1960, 308 p.

NOTE: This collection of articles is intended for personnel in scientific institu-
tions and schools of higher learning, as well as physical metallurgists and
physicists specializing in metals. It may also be useful to students of these
fields.

COMMENT: The collection contains results of experimental and theoretical inves-
tigations carried out by schools of higher education and scientific research
institutions in the field of the relationship between metals and alloys.
Several articles are devoted to the investigation of the internal-friction
method of the decomposition of the internal friction. Also analyzed
are the aspects of the crystallization, plastic deformation, high-temper-
ature behavior of alloys, etc. Problems of the relation between internal
friction and temperature, the use of the method of internal friction in
the investigation of phase transformations, and the mechanism of liquid
diffusion are discussed. The collection also contains articles on the damping charac-
teristics of materials, elastic after-effect, and the new photo-acoustic method.
No formalities are mentioned. References follow most articles. There are 306
references, 195 Soviet and 178 non-Soviet.

Relaxation Processes in Metals (Cont.) 807/5305
Kuznetsov, V.I., and Don Gorden (Dnepropetrovsk State University, Dnepropetrovsk,
Ukraine). Analysis of the Internal Friction of Polycrystalline
Metals. Problems
292

Mits, Ryo (Institute of Technical Physics of the Czechoslovak Academy of
Sciences). Mechanism of the Alternating Magnetic Field
as a Relaxation Process
293

Solubility of Gases in Metals (Cont.) 807/5305
Kuznetsov, V.I., and Don Gorden (Dnepropetrovsk State University, Dnepropetrovsk,
Ukraine). Analysis of the Internal Friction of Polycrystalline
Metals. Problems
294

Research. Institute steel
Bolshevikovye yuzhnykh v metallurgii i shtal'makh; Izdatel'stvo Mashinostroyeniya
Moskva (Moscow Institute of Machine Building and Alloy Technology of the
Academy of Sciences), Moscow, Metallurgicheskii, 1960, 308 p.

NOTE: This collection of articles is intended for personnel in scientific institu-
tions and schools of higher learning, as well as physical metallurgists and
physicists specializing in metals. It may also be useful to students of these
fields.

GOLIK, V.R.; DUBROV, V.A.

Use of contact microradiography to study the distribution of
alloying elements in steel. Trudy Ukr. nauch.-issl. inst. met.
no.6:238-248 '60. (MIRA 14:3)

(Steel alloys--Metallography)
(Microradiography)

S/126/60/010/005/025/030
E111/E452

AUTHORS: Golik, V.R., Dubrov, V.A., Sandler, N.I. and
Kukol', V.V.

TITLE: Influence of Vanadium on Phase Transformations in
Manganese Steel

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.5,
pp.786-790

TEXT: The authors give results of a study of the influence of vanadium on the kinetics of the decomposition of the solid solution, carbide formation and solution of vanadium carbides in manganese steel. Three types of steel with about 0.15% C and 1.5% Mn were used: type $\Phi 57$ (F57) had a vanadium content of 0.57%, corresponding to the stoichiometric composition of vanadium carbide; $\Phi 11$ (F11) corresponding to that in production heats (0.11% V); and the third type $\Phi 0$ (F0) had no vanadium. Blanks (20 x 20 x 8 mm bars and 8 x 80 mm cylinders) from hot-rolled strip were cut along the direction of rolling and hardened from 1200°C in water at 4°C. The blanks were then reheated to 100 to 1200°C, again quenched and cut into specimens, from which the

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S/126/60/010/005/025/030
E111/E452

Influence of Vanadium on Phase Transformations in Manganese Steel

decarburized layer was removed. Phase changes were studied by measuring electrical resistivity, coercive force, hardness and integral half width of X-ray diffraction lines. In the X-ray investigation, published methods (Ref.4,5) were used. Resistivity, coercive force and Rockwell hardness are shown in Fig.1, 2 and 5 respectively, as functions of reheating temperature for each of the steels. Fig.4 shows for type F57 steel the values of Vickers hardness and integral half-width as functions of reheating temperature. The results indicate that the effects of vanadium in steels with the manganese content used are similar to those in steels with the usual (0.5% approx) manganese content. There are 5 figures, 1 table and 7 references: 6 Soviet and 1 Non-Soviet.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut metallov
(Ukrainian Metals Research Institute)

SUBMITTED: May 9, 1960

Card 2/2

S/126/62/014/004/011/017
E073/E535

AUTHORS: Golik, V.R., Dubrov, V.A., Sandler, N.I. and Yunash, V.M.

TITLE: Solution and formation of niobium carbide in low-carbon manganese steel

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.4, 1962, 555-558

TEXT: The temperature of solution of niobium carbide in low-carbon manganese steel, as well as the rejection of a special carbide during tempering, was investigated for several heats produced in a 250 kg induction furnace with a basic crucible. Composition (wt.%): 0.16/0.15 C, 0.75/1.28 Mn, 0.26/0.29 Si, 0.036/0.050 S, 0.020 P and 0.08-0.29 Nb. The produced 65 kg ingots were rolled into 11 x 70 mm strip from which 80 x 5.5 mm cylindrical and 10 x 10 x 5 mm polished specimens were cut in the longitudinal direction. The carbide transformations were studied by electron diffraction (reflection method) by measuring the electric resistivity (accuracy $\pm 1.5\%$), the coercive force (ballistically, accuracy $\pm 1\%$) and the Vickers hardness on specimens in the following states: hardened in water from 600,700, Card 1/3

Solution and formation of ...

S/126/62/014/004/011/017
E073/E535

800, 900, 1000, 1100 and 1200°C; hardened from 1200°C followed by annealing for three hours in the temperature range 200-600°C (in steps of 100°C). Niobium carbide was found to dissolve above 1100°C; steels with equal Nb contents but higher Mn contents showed a sharp rise in the coercive force for hardening temperatures in the range of 900-1200°C. This indicates that an increased Mn content in the steel brings about dissolution of the carbide phase associated with a special carbide. In all the investigated steels the decomposition of the solid solution began at tempering temperatures above 200°C, whereby iron carbide formed first and then, at higher tempering temperatures (400°C for the steel containing 28% Mn and 600°C for steel with 0.75% Mn), niobium carbide began to form. With increasing tempering temperatures the coercive force decreased and, due to the effect of Nb carbide formation, the decrease in the range 400-600°C was less for Nb-containing steel than for Nb-free steels. The change in hardness in the tempering temperature range 400-500°C is similar to the change in coercive force; addition of Nb impedes the drop in hardness and at 600°C there was even a slight increase in hardness. There are 3 figures and 2 tables.

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Solution and formation of ...

S/126/62/014/004/011/017
E073/E535

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut
metallov
(Ukrainian Scientific Research Institute for
Metals)

SUBMITTED: January 8, 1962 (initially)
February 3, 1962 (after revision)

Card 3/3

L 10001-0/ SWI(M)/AWP(S)/BII 100(U) 00

ACC NR: AP6023700 SOURCE CODE: UR/0126/66/021/004/0551/0554

AUTHOR: Dubrov, V. A. 28

ORG: Ukrainian NII of Metals, Khar'kov (Ukrainskiy NII metallov)

TITLE: High-temperature metallographic study of the kinetics of the δ - α transformation in iron-nickel alloys 14

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 4, 1966, 551-554

TOPIC TAGS: iron alloy, nickel alloy, martensite, metallurgic research

ABSTRACT: The kinetics of the δ - α transformation in iron-nickel alloy containing from 5--20% nickel was studied. The investigation was carried out with a high-temperature microscope and a motion picture camera. This investigation supplements the results of G. V. Kurdjumov and H. D. Perkas (DAN SSSR, 1956, III, 4, 318). The experimental results are summarized in graphs and tables (see Fig. 1). It was found that the growth of martensite crystals in the alloys depends on the nickel content of the latter. For alloys containing less than 14% Ni, the rate of growth of

Card 1/2 UDC: 548.53

L 10447-67

ACC NO AP6023700



Fig. 1. Gradual growth of martensite crystals in alloy Fe-10% Ni. Rate of cooling 10 deg/sec. Relief. Time span between frames 1 sec; x 200.

martensite crystals is relatively slow. Orig. art. has: 1 table and 3 graphs.

SUB CODE: 11/

SUBM DATE: 22May65/

ORIG REF: 008/

OTH REF: 009

Card 2/2 ⁶⁷

32447. i Kolesnikov, P. O. Krupnoblochnyy montazh metallicheskogo karkasa gradirni pri pomoshchi machty. Elektr. stantsii, 1949, No. 10, s. 45-47.

SO: Letopis' Zhurnal'nykh Statey, Vol. 44

DOBROV, V.D., inst.

Power engineering in the Polish People's Republic. Energetyka.
za rub. no. 5,44-46 8-0 '60. (MIRA 13:10)
(Poland--Electric power).

18(5)

SOV/112-59-2-3520

Translation from: Referativnyy zhurnal, Elektrotehnika, 1959, Nr 2, p 184 (USSR)

AUTHOR: Dubrov, V. M., and Shirokov, G. G.

TITLE: Controlling a Group of Guiding-Rope Winches (About an Article by Ye. F. Sklyarenko) (Upravleniye gruppoy lebedok dlya napravlyayushchikh kanatov /Na stat'yu Ye. F. Sklyarenko/)

PERIODICAL: Shakhtnoye str-vo, 1958, Nr 1, pp 21-22

ABSTRACT: Disadvantages are listed of the scheme for controlling a group of guiding-rope winches described in an article by Ye. F. Sklyarenko (see Referativnyy Zhurnal, Elektrotehnika, 1958, 19760). Operating experience is reported with installations for joint control of winches developed by Giproshtakhtostroy mash. One illustration.

Card 1/1

DUBROV, V.M., insh.; SHIROKOV, G.G., insh.

Electric signal system used in shaft sinking. Bezop. truda v prom. k
no. 4:27 Ap '60. (Electricity in mining) (MIRA 13:9)

1 10288-67 EMP(R)/EMP(W)/EMP(V)/EMP(K)/EMP(T)/ATT IJP(c) JI/IN/GD
ACC NR: AT6030944 (N) SOURCE CODE: UR/0000/66/000/000/0178/0189

AUTHORS: Prekhorov, N. N. (Doctor of technical sciences); Dubrov, V. N. (Engineer) 22
21

ORG: none

TITLE: The effect of the weld type on the pattern of crystallization and on the character of failure of the seam metal

SOURCE: Moscow. Vysshoye tekhnicheskoye uchilishche. Prochnost' svarnykh konstruktsiy (Strength of welded structures). Moscow, Izd-vo Mashinostroyeniye, 1966, 178-189

TOPIC TAGS: welding technology, welding, arc welding, seam welding, crystallization, metal crystallization, steel alloy/ VKS-1 steel alloy

ABSTRACT: Investigation is made of the effect of the type of weld on the structure, mechanical properties, and also on the failure of metal in a seam. Variation of the pattern of crystallization was experimentally studied on light alloy high-strength steel VKS-1. Specimens 2.5 mm thick were melted by an argon-arc device so that a planar pattern of crystallization was maintained. The welding was set so that a certain constant weld seam cross section was maintained for all rates of one-pass welding. Preheating effects were plotted against linear energy (joules/cm) and welding rate (cm/sec). Additional data plots show the effect of preheating and welding rate on the angle of slope of tangential crystallite with the longitudinal seam axis. This angular relationship is

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ACC NR: AT6030944

$$\frac{\sigma}{2} = \text{arctg} \left[\frac{0.3288n}{m} \left(1 - \frac{1}{2.718n^2} \right) \frac{q}{\lambda T} \xi \right]$$

where ξ , m , and n are computed or tabulated coefficients, and T is the equilibrium temperature of hardening (see N. N. Prokhorov, A. S. Mastryukova. Raschet skhemy kristallizatsii svarnogo shva. Svarochnoye proizvodstvo, 1961, No. 2). The authors found that the method of one-pass welding of steel leads to a substantial change in its primary structure and mechanical properties. A mean rate of welding was found for which the impact strength at room temperature and the strength limit at the temperature of liquid nitrogen are at maximums. The character of the fracture of a metal seam is basically a function of its primary structure. Hence control of the mechanical properties of the seam metal in high strength steels by means of weld process variation is of potential benefit and thus deserves the attention of the technologists in this field. Orig. art. has: 8 figures and 6 equations.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 001

Card 2/2

L 07436-67 ~~ESP(k)/ESP(a)/ESP(v)/ESP(s)/ESP~~ IJP(c) JD/HR

ACC No: AP6029222

SOURCE CODE: UR/0145/66/000/004/0141/0144

AUTHOR: Dubrov, V. N. (Aspirant)

ORG: None

TITLE: Embrittling effect of preliminary and concomitant heating during welding of high-strength steel

SOURCE: IVUZ. Mashinostroyeniye, no. 4, 1966, 141-144

TOPIC TAGS: welding technology, high strength steel, brittleness, weld evaluation

ABSTRACT: The author considers the capacity of seam metal to resist brittle fracture as a function of the temperature of preliminary and concomitant heating. Plates of SVKS-1 low-alloy high-strength carbon steel 2.5 mm thick were welded by the argon-arc method. Joints with an approximately constant shape and cross section were produced by welding at speeds of 0.17, 0.55, 1.00 and 1.72 cm/sec without heating as well as with preliminary and concomitant heating to 200 and 500°C. It was found that preliminary and concomitant heating in welding of high-strength steels of this type causes embrittlement of the seam metal which increases with heating temperature. This phenomenon takes place in the initial crystallization period and reduces the impact strength and bending strength in liquid nitrogen. Embrittlement may be eliminated only by treatment which disorients the structure and eliminates chemical nonhomogeneity. If heat-

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UDC: 621.791+669.140.669.18

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25
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L 07436-67

ACC NR: AP6029222

ing is a necessary part of the welding conditions, it should be done with regard to the negative effect of preliminary and concomitant heating on the capacity of the seam metal to resist brittle fracture. The article was presented for publication by Doctor of technical sciences, Professor N. N. Prokhorov, MVTU. Orig. art. has: 4 figures.

SUB CODE: 11, 13/ SUBM DATE: 03Nov65/ ORIG REF: 005/ OTH REF: 001

ms
Card 2/2

KULIKOV, V.O., insh.; KHIL'KO, M.M., insh.; PRILEPSKIY, V.M., insh.;
ZUBKOV, A.P., insh.; prinimani uchstiye; MERSHCHIIY, N.P.,
insh.; CHEVVERIKOV, V.Ya., insh.; DUBROV, V.S., insh.; VOLKOV,
T.F., tekhnik; YERS'DV, V.I., tekhnik; SAFONOVA, M.F., tekhnik

Using scale in steelmaking by the scrap and ore process.
Stal' 20 no.8:708-710 Ag '60. (MIRA 13:7)
(Open-hearth process)

MAL'KOV, V.G., insh.; PRILEPSKIY, V.I., insh.; DUBROV, V.S., insh. V rabote
prinimali uchastiye: KHIL'KO, M.M., insh.; MERSHCHIN, N.P., insh.;
CHETVERIKOV, V.Ya., insh.; KUROV, I.N., insh.; RATHER, B.R., insh.;
BOUYCHEV, G.D., insh.; ALFEROV, I.S., insh.; PAVLENKO, N.M., insh.;
FINKEL'SHTAYN, M.M., insh.; PLUZHKO, N.F., insh.; SAMSOV, T.F.,
insh.; BABERKO, N.N., insh.; LAD'YANOV, N.I., insh.; TUPIL'KO, V.S.,
insh.

Decoxidising and alloying 2502C steel with ferromanganese and ferro-
silicon in 200-ton ladles. Stal' 20 no.9:803-806 S '60.(MIRA 13:9)
(Steel, Structural--Metallurgy)

KHOKHELOV, P.L., insh.; DUBROV, V.S., insh.; SLEPTSOV, N.I., insh.;
SAYAPIN, Yu.V.

Operation of water-cooler cupola furnaces. Stal' 22 no.3:286-
287 Kr '62. (MIRA 15:3)
(Cupola furnaces—Cooling)

KHOKHLOV, P.L.; DUBROV, V.S.; SLEPTSOV, N.I.; SAYAPIN, Yu.V.

Analysis of cupola performance with various methods of water
cooling. Lit.proisv. no.7:36-37 JI '62. (MIRA 16:2)
(Cupola furnaces—Cooling)

DUBROV, V.V.; CHERNOVOL, A.V. [Chernovol, A.V.]

Effect of ferrosilicon additions on graphite formation in
magnesium cast iron. Nauk. pratsi Inst. lyv. vyrob. AN URSR

8:57-70 159.

(MIRA 14:1)

(Cast iron—Metallurgy)

(Ferrosilicon)

DUBROV, V.V.; PLETNIK, R.I. [Pletnyk, R.I.]

Critical temperatures for high strength cast iron with
nodular graphite. Nauk. pratsi Inst. lyv. vyrob. 1959.
8:78-86 '59. (MIRA 14:1)
(Cast iron—Thermal properties)

DUBROV, V. V.

PHASE I BOOK EXPLOITATION SOV/5211

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Kiyevskoye obshchestvo pravleniye.

Metallovedeniye i tericheskaya obrabotka (Physical Metallurgy and Heat Treatment of Metals) Moscow, Mashiz, Vol. 130 P. Serials and Inserts. 5,000 copies printed.

Sponsoring Agency: Gosudarstvennyy nauchno-tekhnicheskii imitatse Sovetskiy Ministerstva Mashinostroeniya i Mashinostroitel'noy promyshlennosti. Kiyevskoye obshchestvo pravleniye.

Editorial Board: M. P. Buzun, Doctor of Technical Sciences, V. Yz. Technical Director of Technical Sciences, D. I. Dvornik, Doctor of Technical Sciences, I. S. Krasitskiy, Engineer, A. A. Makovskiy, Candidate of Technical Sciences, V. G. Paruykov, Doctor of Technical Sciences, and A. V. Chernovol, Candidate of Technical Sciences; Ed. A. B. Soroka; Tech. Ed. M. S. Gorodavol'skiy; Chief Ed., Mashiz (Southern Dept.); V. K. Sedyuk, Engineer.

Card 1/10

PURPOSE: This selection of articles is intended for scientific workers and technical personnel of research institutes, plants, and schools of higher technical education.

COVERAGE: The collection contains papers presented at a convention held in Kiyev on problems of physical metallurgy and methods of the heat treatment of metals applied in the machine industry. Phase transformations in metals and alloys are discussed, and results of investigations conducted to ascertain the effect of heat treatment on the quality of metal are analyzed. The possibility of obtaining metals with given mechanical properties is discussed, as are problems of steel brittleness. The section includes papers dealing with kinetics of transformation, heat treatment, and properties of cast iron. No personalizations are mentioned. Articles are accompanied by references, mostly Soviet.

TABLE OF CONTENTS:

Stregulin, A. I., Engineer, and L. A. Mal'nikov (Sverdlovsk). Transformation of Austenite Into Martensite Under High Pressure	12
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307/5511

Physical Metallurgy (Cont.)

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DUBROV, V.V.

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PHASE I BOOK EXCITATION SCY/5789

Nauchno-tekhnicheskaya konferentsiya po razvitiyu proizvoditel'nykh sil Kiyevskogo ekonomicheskogo rayona

Goryachaya obrabotka metallov; trudy konferentsii. vyp. 2. (Hot Working of Metals; Transactions of the Scientific Technological Conference on the Development of the Productive Forces of the Kiyev Economic Region. no. 2) Kiyev, Izd-vo AN UkrSSR, 1969. 142 p. 1000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Sovet po isucheniyu proizvoditel'nykh sil UkrSSR. Institut liteynogo proizvodstva. Sovet narodnogo khozyaystva Kiyevskogo ekonomicheskogo rayona. Tekhniko-ekonomicheskij sovet.

Editorial Board: Resp. Ed.: A.A. Gorshkov, Corresponding Member, Academy of Sciences UkrSSR, B.B. Tsizin, Engineer, and P.A. Novikov, Engineer; Ed. of Publishing House: T.K. Remannik; Tech. Ed.: O.A. Kadashovich.

PURPOSE: This collection of articles is intended for technical personnel in manufacturing plants and planning organizations, scientific workers, and teachers in technical schools of higher education.

Card 1/6

Hot Working of Metals (Cont.)

SOV/5789

COVERAGE: The book is devoted to problems of the introduction of advanced technology and processing in founding and preworking. Problems in powder metallurgy are also analyzed. No personalities are mentioned. References accompany some of the articles. There are 56 references, mostly Soviet.

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[Handbook on iron founding of high-strength pig iron] Spravochnik po izgotovleniyu otlivok iz vysokoprechnogo chuguna. By A.A.Gorshkov i dr. Pod obshchei red. A.A.Gorshkova. Moskva, Mashgiz, 1961. 297 p. (MIRA 15:2)

1. Chlen-korrespondent Akademii nauk Ukrainakoy SSR (for Gorshkov).

(Iron founding)

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Casting and heat treatment of piston group parts from nodular
iron for the IAAZ-204 and IAAZ-206 engines. Nauk. pratsi Inst.
lyv. vyrob. AN URSR 9:66-72 '60. (MIRA 15:3)
(Cast iron—Heat treatment) (Pistons) (Iron founding)

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iron. Nauch. trudy Inst. lit. proizv. AN URSS 11:15-25 '62.
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Generalized readout theorem and an ideal filter. Vop. pered. inform.
1:25-31 '62. (MIRA 16:6)

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DRAGAN, Ya.P. [Drahan, IA.P.]; DUBROV, Ya.A. [Dubrov, IA.O.]; MIKHAYLOVSKIY,
V.M. [Mykhailovs'kyi, V.M.]

Theory of nonstationary random processes. Dop. AN URSR no.9:1162-1165
'62. (MIRA 18:4)

1. Institut mashinovedeniya i avtomatiki AN UkrSSR. 2. Chlen-ker-
respondent AN UkrSSR (for Mikhaylovskiy).

S/O44/62/000/010/037/042
B160/B186

16.7850

AUTHOR: Dubrov, Ya. A.

TITLE: Bessel functions and orthogonal polynomials as transfer agents in communications systems

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1962, 56, abstract 10V280 (In collection: Avtomat. kontrol' i izmerit. tekhn. no. 5, Kiev, AN USSR, 1961, 46-54)

TEXT: For communications systems using linear selection the transmitted signal takes the form

$$f(t) = \sum_0^N a_k f_k(t), \quad (1)$$

where the functions $f_k(t)$ are linearly independent over the range $[0, T]$ occupied by the transmitted information. By analysis of the signal over the range $[0, T]$ it is possible, when there is no noise, to regenerate the signal $f(t)$ unambiguously, i.e. to determine the number a_k . The f_k generally used are $e^{ik\omega t}$ functions, where ω is the set frequency. The
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Bessel functions and orthogonal ...

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B160/B186

possibility is investigated of using $I_p(x_k t)$ Bessel functions, where x_k are the roots of the equation $I_p(xT) = 0$, as f_k , as well as the possibility of using Jacobi, Hegenbauer, Chebyshev and Legendre polynomials for the same purpose. In order to create the corresponding communications system the possibility of generating f_k functions at the receiving end needs to be examined. For this purpose, linear passive four-terminal networks can be used if their inputs are supplied with a single pulse $V(t)$, where $V(t)$ is equal to zero at $t > 0$ and equal to unity at $t < 0$. When using a Bessel function it is best to generate $t^{1/2} I_p(x_k t)$ functions so as to avoid having to generate, at the receiving end, the weighted function $\psi(t) = t$ necessary for picking out the elementary signal by using the orthogonality of $t^{1/2} I_p(x_k t)$. The Laplace transform of the function $t^{1/2} I_p(x_k t)$ can be expressed by a hypergeometric function. It is desirable to select $p = 2n + 5/2$ or $p = -2n - 3/2$ since in this the hypergeometric series is broken, which is necessary in order to be able to realize the corresponding four-terminal network. It is also possible to realize the

Card 2/3

Bessel functions and orthogonal ...

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B160/B186

four-terminal networks for the other sets of f_k under discussion, since the Laplace transform of $f_k(t)$ is a generalised hypergeometric function; but the corresponding communications systems then becomes more complex as the weighted function has to be generated at the receiving end. Two forms of modulation are possible using (1) signals. In "amplitude" modulation each channel is ascribed a definite term of the sum (1) with a "frequency" ω_k , whilst in "frequency" modulation each channel is ascribed n "frequencies", the "frequencies" of the different channels' functions not overlapping. The author considers the $t^{1/2} I_p(\omega_k t)$ set of functions to be the most convenient. [Abstractor's note: Complete translation.]

Card 3/3

ACCESSION NR: AT4001243

S/2900/63/000/002/0005/0028

AUTHORS: Dragan, Ya. P.; Dubrov, Ya. A.; Mikhaylovskiy, V. N.

TITLE: Certain general properties of linear transformations

SOURCE: AN UkrRSR. Insty*tut mashy*noznavsta i avtomaty*ky*. L'viv. Voprosy* peredachi informatsii, no. 2, 1963, 5-28

TOPIC TAGS: linear transformation, linear information system, non-stationary processes, Sturm Liouville differential operator, operator expansion in eigenvalue

ABSTRACT: The purpose of the article is the derivation of a general mathematical formalism for the analysis of linear systems with variable parameters in response to nonstationary signals. A generalized shift operation corresponding to a second-order differential equation is introduced and its properties described. Expansions in eigenfunctions of a second-order operator are then treated and various general properties of the transformations defined by such an operator presented. It is claimed that the general properties are derived here for the first time, since there is no systematic de-

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ACCESSION NR: AT4001243

velopment of the theory of general spectral expansions in Hilbert space. The application of this formalism to analysis of linear information systems and other stationary processes will be treated in future articles. Orig. art. has: 36 formulas.

ASSOCIATION: Insty*tut.mashy*noznavstva i avtomaty*ky AN UkrSSR
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Card 2/2

... Ya. P. (Senior engineer); Dubrov, A. A. (Senior engineer), M. M. ...
... member AN UkrSSR)

... theory of certain classes of ...

... UkrSSR, Fiziko-mekhanicheskiy ...

... no. 1, 1962, 1-20

... information transfer ...
... eigenfunction expansion, ...

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... transmitting devices ...

... and uniform pulse ...
... information. The authors therefore ...

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... relative to ...

... are viewed as being eigenf...

ENCLOSURE

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Vop. pered. inform. 3:21-27 '64. (MIRA 18:1)

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tion \mathcal{X} and the mean probability $P_{\mathcal{X}}$ of the symbols of the
are given. The problem consists of finding the effective
of the most effective code and its parameters. The efficiency of the
is measured by the quantity

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"How to Organize Traumatological Aid for Under-
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4 pp.

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(3) what occurs in the bone marrow after the nail is removed. Dir, Inst of Surg: M. N. Khuntin, Corr Mem, Acad Med Sci (Approved). Sci Dir, Path Anat Inst Imeni Acad A. I. Arkhivov: I. N. Shabad, Corr Mem, Acad Med Sci.

56/49253

PA 11/1971

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[with summary in English on pp.157-158]. Vest.khir. 79 no.10:
52-58 0 '57. (MIRA 10:12)

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instituta im. M.F.Vladimirovskogo (dir. - I.M.Leonenko).

(FRACTURES, surg.

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