MINKER, E.; KOLTAI, M.

The effect of dihydroergotoxine on the acetylcholine reaction of the cat's nictitating membrane. Acta physiol. Acad. sci. Hung. 25 no.3:285-293 '64

1. Institute of Pharmacology, University Medical School, Szeged.

MINKER,E.; KOLTAI,M.

Effect of protamine sulphate on the transmission process in peripheral sympathetic ganglia. Acta physiol. acad. sci. Hung.24 no.3:365-371 '64

1. Institute of Pharmacology, Medical University, Szeged.

NOVAK, Istvan; BUZAS, Geza; MINKER, Emil; KOLTAI, Matyas; SZENDREI, Kalman

Crystalline active ingredients of Ruta graveolens. Acta pharm. Hung. 35 no.2:90-95 Mr '65.

VLASOV, A.G., dots.; MINKEV, I.M., inzh.

Determining the electric field in a dielectric in connection with high-frequency heating. Izv.vys.ucheb.zav.; energ. 3 no.3:47-55 Mr '60. (MIRA 13:3)

1. Gosudarstvennyy ordena Lenina opticheskiy institut imeni S.I.Vavilova.

(Dielectrics) (Induction heating)

PROCESSES AND PROPERTIES INDEX

Simultaneous nitridation and cementation. A. N. Minkevich. Russ. 55,381, Aug. 31, 1939. Simultaneous nitridation and cementation are effected in molten cyanides with the admission of preheated NH_3 into the bath.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MINKEVICH, A. N., PISAREV, N. N. AND SOLODIKHIN, A. G.

"Nitriding as a Method of Protecting Steel from Corrosion," ITEIN, Moscow, 1940.

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX 3RD AND 4TH ORDERS

Research Progress [Surface Treatment of Steel with Aluminium]. (*Light Metals*, 1940, 3, (26), 66–67).—An account is given of recent work by Minkevich and Zudin (*Vestn. Metallopromish.*, 1939, 8, 67) on the diffusion of aluminium into iron when the iron is heated at 900°–1050° C. for 3–12 hrs. in contact with a powder consisting of aluminium (or its alloys), an inert material such as quartz or fireclay, and ammonium chloride. Results are given in graphical form.—H. W. L. P.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

Gaseous chromizing of steel. A. N. Minkevich. *Stal* [N. S.] 3, No. 5/6, 68-9(1943).—Expts. on gaseous chromizing of steel were carried out in an externally heated quartz tube. Lumps of Cr or Fe-Cr were placed at the beginning of the heating zone from the side at which the gas, H, was admitted. Beyond the Cr or Fe-Cr or on top of it were placed specimens of steel. The heating was started and when the temp. reached 950-1300° a stream of H was started. Before entering the quartz tube the purified H passed through a HCl soln., thus becoming satd. with it. The following were studied: The effect of temp. (950-1300°); passing 25-30 l. of H per hr. during 2 hrs.; the effect of the vol. of H passed (20-70 l. per hr., for 4 hrs. at 980°) and the effect of time (2-6 hrs. at 980° and 40-45 l. of H per hr.). In each case control samples were run by the hard chromizing method. Depending on temp. (950, 980, 1100 and 1300°), the depth of the chromized layer increased from 0.025 to 0.03, to 0.05 and to 0.19 mm., resp. As for time, the depth of the chromized layer increased from 0.05 mm. at 2 hrs. to 0.08 at 4 and to 0.15 mm. at 6 hrs. The depth of the chromized layer increased with the rate of flow of H. At 20 l. per hr. it was 0.03 mm. It increased to 0.05 mm. at 30 l. per hr. and then to 0.08 mm. at 50 l. per hr. and to 0.11 mm. at 70 l. per hr. Gaseous chromizing was more rapid than hard chromizing for the same depth and was deeper for the same time. Thus gaseous chromizing can be accomplished in shorter time and at a lower temp. than hard chromizing. Gaseous chromizing produces a smooth, shiny or dull surface—more so than does hard chromizing. Chromized specimens were tested in 25% HNO_3 and 35% H_2SO_4 along with unchromized specimens and specimens of a stainless steel. In HNO_3 the chromized steel was less attacked than the unchromized one and only a little more than the stainless steel. In H_2SO_4 the chromized steel was considerably more resistant than the stainless. The C content of a steel greatly affects its chromizing; the more C the less does Cr penetrate. The penetration of Cr into a steel with 0.02?% of C was 0.08 mm. (980°, 4 hrs., 30-35 l. of H per hr.). The depth dropped steeply to 0.01 in a steel with 0.81% of C. Chromizing raises greatly the surface hardness of a high-C steel, but it raises that of a low-C steel only slightly.

M. Hosch

MINKEVICH, A. N.

"Chemico-Thermal Treatment of Steel" Gosudarstvennoye Nauchno-Tekhnicheskoye Izdatel'stvo Mashinostroitel'noy Literatury. Moscow (1950). 432 pp.

It is perhaps noteworthy that Dubinin (in "Ceramic Method of Gaseous Chromizing Steel", 1953) considers gaseous methods the most technically perfected means of chromizing; whereas, in 1950, Minkevich stated chromizing in liquid or gaseous media was nonindustrial although this is a difference of viewpoint or a real commercial development that has taken place between 1950 and 1953.

B-77554

MINKEVICH, A. N.

17155. Surface Impregnation of Steel With Beryllium. A. N. Minkevich. Henry Brutcher, Altadena, Calif., Translation [illegible] (From book "Surface Impregnation of Steel", Chapter X. Published by Mashgiz, Moscow, 1950.) Pack and gas diffusion coating. Effects on hardening, microstructure, corrosion, and heat resistance. Micrographs, graphs, tables. 4 ref.

MINKEVICH, A. N.

17156 Surface Impregnation of Steel With Molybdenum. A. N. Minkevich. Henry Brutcher, Altadena, Calif., Translation [redacted] from book "Surface Impregnation of Steel". Chapter XI. Published by Mashgiz, Moscow, 1950.)

Gas and pack molybdizing of Fe and steel. Microstructure. Micrograph, graphs. 4 ref.

MINKEVICH, A.N.

17157 Surface Impregnation of Steel With Tungsten. A. N. Minkevich, Henry Brutcher, Altadena, Calif., Translation no. [illegible] (From book "Surface Impregnation of Steel", Chapter XII. Published by Mashgiz, Moscow, 1950.)

Pack, gas, and electrolytic tungstenizing. Microstructure and hardness. Graphs, micrograph, table. 6 ref.

MINKEVICH, A.N.

372 **Surface Impregnation of Steel With Vanadium.** A. N. [illegible] Minkevich. *Henry Brutcher, Altadena, Calif.*, *Translation* [illegible] [illegible] (From book "*Surface Impregnation of Steel*", Chapter XIII. Published by Mashgiz. Moscow, 1950.)

Effect of impregnation time in ferro-vanadium powder upon case depth of vanadized Fe. Microstructure and hardness. Tables, micrograp! s, graph.

MINKEVICH, A. N. and KALININ, A. T.

"Development of the Process of Liquid Carburizing (Cyaniding) Steel," pp 81/99 in Modern Methods of Heat Treating Steel by Dom Inzhenera i Tekhnika imeni F E Dzerzhinskovo. Gosudarstvennoye Nauchno-Tekhnicheskoye Izdatel'stvo Mashinostroitel'noy Literatury, Moscow (1954) 404 pp.

Evaluation B-86350, 30 Jun 55

AL'TGAUZEN, O.N., kandidat fiziko-matematicheskikh nauk; BERNSHTEYN, M.L., kandidat tekhnicheskikh nauk; BLANTER, M.Ye., doktor tekhnicheskikh nauk; BOKSHTEYN, S.Z., doktor tekhnicheskikh nauk; BOLKHOVITINOVA, Ye.N., kandidat tekhnicheskikh nauk; BORZDYKA, A.M., doktor tekhnicheskikh nauk; BUNIN, K.P., doktor tekhnicheskikh nauk; VINOGRAD, M.I., kandidat tekhnicheskikh nauk; VOLOVIK, B.Ye., doktor tekhnicheskikh nauk [deceased]; GAMOV, M.I., inzhener; GELLER, Yu.A., doktor tekhnicheskikh nauk; GORELIK, S.S., kandidat tekhnicheskikh nauk; GOL'DENBERG, A.A., kandidat tekhnicheskikh nauk; GOTLIB, L.I., kandidat tekhnicheskikh nauk; GRIGOROVICH, V.K., kandidat tekhnicheskikh nauk; GULYAYEV, B.B., doktor tekhnicheskikh nauk; DOVGALEVSKIY, Ya.M, kandidat tekhnicheskikh nauk; DUDOVTSEV, P.A., kandidat tekhnicheskikh nauk; KIDIN, I.N., doktor tekhnicheskikh nauk; KIPNIS, S.Kh., inzhener; KORITSKIY, V.G., kandidat tekhnicheskikh nauk; LANDA, A.F., doktor tekhnicheskikh nauk; LEYKIN, I.M., kandidat tekhnicheskikh nauk; LIVSHITS, L.S., kandidat tekhnicheskikh nauk; L'VOV, M.A., kandidat tekhnicheskikh nauk; MALYSHEV, K.A., kandidat tekhnicheskikh nauk; MEYERSON, G.A., doktor tekhnicheskikh nauk; MINKEVICH, A.N., kandidat tekhnicheskikh nauk; MOROZ, L.S., doktor tekhnicheskikh nauk; NATANSON, A.K., kandidat tekhnicheskikh nauk; NAKHIMOV, A.M., inzhener; NAKHIMOV, D.M., kandidat tekhnicheskikh nauk; POGODIN-ALEKSEYEV, G.I., doktor tekhnicheskikh nauk; POPOVA, N.M., kandidat tekhnicheskikh nauk; POPOV, A.A., kandidat tekhnicheskikh nauk; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; ROGEL'BERG, I.L., kandidat tekhnicheskikh nauk;

(Continued on next card)

AL'TGAUZEN, O.N.---- (continued) Card 2.
SADOVSKIY, V.D., doktor tekhnicheskikh nauk; SALTYKOV, S.A., inzhener; SOBOLEV, N.D., kandidat tekhnicheskikh nauk; SOLODIKHIN, A.G., kandidat tekhnicheskikh nauk; UMANSKIY, Ya.S., kandidat tekhnicheskikh nauk; UTEVSKIY, L.M., kandidat tekhnicheskikh nauk; FRIDMAN, Ya.B., doktor tekhnicheskikh nauk; KHIMYSHIN, F.F., kandidat tekhnicheskikh nauk; KHRUSHCHEV, M.M., doktor tekhnicheskikh nauk; CHERNASHKIN, V.G., kandidat tekhnicheskikh nauk; SHAPIRO, M.M., inzhener; SHKOL'NIK, L.M., kandidat tekhnicheskikh nauk; SHRAYBER, D.S., kandidat tekhnicheskikh nauk; SHCHAPOV, N.P., doktor tekhnicheskikh nauk; GUDTSOV , N.T., akademik, redaktor; GORODIN, A.M. redaktor izdatel'stva; VAYNSHTEYN, Ye.B., tekhnicheskiy redaktor

[Physical metallurgy and the heat treatment of steel and iron; a reference book] Metallovedenie i termicheskaia obrabotka stali i chuguna; spravochnik. Pod red. N.T.Dudtsova, M.L.Bernshteina, A.G. Rakhshtadta. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 1204 p. (MLRA 9:9)

1. Chlen -korrespondent Akademii nauk USSR (for Bunin)
(Steel--Heat treatment) (Iron--Heat treatment)
(Physical metallurgy)

MINKEVICH A N

MINKEVICH, A.N., kandidat tekhnicheskikh nauk; TAYMER, A.D., inzhener; ZOT'YEV, Yu.A., inzhener.

Nitriding titanium in ammonia gas. Metalloved. i obr.met.no.7:39-48 Jl '56. (MIRA 9:9)

1.Moskovskiy institut stali imeni I.V.Stalina.
(Cementation (Metallurgy)) (Titanium)

137-58-6-12795

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 229 (USSR)

AUTHOR: Minkevich, A.N.

TITLE: Current Status and Problems in the Field of Thermochemical Treatment (Sovremennoye sostoyaniye i zadachi v oblasti khimiko-termicheskoy obrabotki)

PERIODICAL: V sb.: Sovrem. napravleniya v obl. tekhnol. mashinostr. Moscow, Mashgiz, 1957, pp 290-312

ABSTRACT: In recent years several new carburizable steels have been studied and introduced into production: boron-containing Cr-Mn steel, 20KhGR (0.0045% B), 30KhGT steel with Zr 18KhGTTs and 30 KhGTTs (0.09-0.18% Zr), which differ from similar steels without Zr, such as 15KhGNTA, etc., by a lower tendency towards growth of the grain. For the cementation of steels new carburizers are being used: "sintin", a liquid mixture of hydrocarbons, a by-product of the treatment of solid fuel, and triethanolamine, a colorless fluid containing (weight %) N 9.4, C 48.5, H 10, O 32.1. Included are plans of equipment for the production of neutral gas (diluting gas) and of kilns for the gas cementation and cyanidation of parts.

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137-58-6-12795

Current Status and Problems in the Field of Thermochemical Treatment

Aggregates for rapid gas cementation of gears with high-frequency heating have been developed and introduced into the industry (automobile plant im. Likhachev). [A drawing of the installation is included.] A new process of low-temperature nitriding has been introduced. The possibility of applying rapid nitriding of Mg-cast iron with spheroidal graphite is noted. The wide use in the industry of the processes of calorizing and sulfidizing of steel and cast iron and chromization and boronization of steel are pointed out. In the very near future thermochemical treatment of metals and alloys on nonferrous base will be used widely: nitriding of Ti and surface hardening of Ti by means of oxidation. Among the promising processes to be named are also the thermochemical treatment of steel with heating in the electrolyte by the method of I.Z. Yasnogorodskiy. Bibliography: 24 references.

A.B.

1. Steel--Thermochemistry 2. Steel--Materials 3. Steel--Properties

Card 2/2

Minkevich, A. N.

129-12-8/11

AUTHORS: Minkevich, A.N., Candidate of Technical Sciences and Shul'ga, Yu. N., Engineer.

TITLE: Surface hardening of titanium by treatment in molten borax. (Poverkhnostnoye uprochneniye titana obrabotkoy v rasplavlennoy bure)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1957, No.12, pp.53-61 (USSR)

ABSTRACT: The results are described of the study of oxidation of titanium in molten borax applying electric protection and borating inside metallic boron powder in vacuum. The experiments were made with forged titanium, smolten from commercial titanium in a vacuum furnace with a graphite crucible, containing 0.5 to 0.6% C; a forged titanium alloy containing 0.5% W (produced by smelting of commercial titanium in an arc furnace inside an argon atmosphere), forged commercial titanium and, finally, a titanium alloy containing 2.5% Cr and 2% Al. To prevent oxidation of the titanium in the molten oxygen containing salts and to protect the surface from corrosion damage, electro-chemical protection was applied, the current density being 0.1 A/cm^2, the voltage 12 to 15 V, the titanium specimen the cathode and

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Surface hardening of titanium by treatment in molten borax.

graphite rods serving as anodes. After removal from the bath the specimens were covered with a layer of the solidifying borax. The graphs, Fig.1, show the distribution of the micro-hardness with the depth of the diffusion layer for one of the tested alloys as a function of the duration and the temperature of the process; the graph, Fig.2, shows the change with depth of the diffusion layer as a function of the duration of the process at various temperatures; Fig.3 shows the change in the surface hardness of one of the alloys as a function of the duration of the process at various temperatures between 900 and 1050°C. Results of preliminary wear tests on one of the tested alloys are given in Table 1,which show that treatment at 930°C for six hours increases the wear resistance by 37 times as compared to equal non-treated specimens. Results of wear tests of another of the tested alloys are given in Table 2, p.56, and these also show appreciable increases in the wear resistance of treated specimens. Numerous micro-structure photos are included and spectral analysis revealed presence in the surface layer of 12 to 20% B.

Surface hardening of titanium by treatment in molten borax.

The results are also given of tests of borating a titanium alloy containing 5% Cr in metallic boron powder in vacuum. The micro-photo, Fig.7, shows that the diffusion layer consists of three clearly pronounced zones, two of which are bright; the outside non-etched one is separated by a line of division from the inside, slightly etched, zone. The graphs, Fig.8, give the results of experiments of treating titanium in a mixture of 60% borax and 4% B_4C as recommended by N. P. Besedin and M. Ye. Blanter. On the basis of the obtained results, the following conclusions are arrived at: treatment in molten borax applying electric protection is an effective method of surface hardening of titanium and brings about an increase in hardness from H_{V_5} = 250-300 to H_{V_5} = 700-950; the wear resistance of thus oxided titanium is comparable with that of case hardened or nitrided steel. Treatment of titanium in molten borax reduces the strength and, particularly, the plasticity and toughness, which is attributed to an intensive grain growth in the process of long duration heating and also with surface hardening. Titanium can be treated in molten borax at 900 to 930°C for three hours with a current density of about 0.1 A/cm^2. Treatment at higher temperatures and of longer durations involves a sharp increase of the brittleness of the layer and also a reduction of the mechanical properties of the titanium. Treatment of titanium in molten borax brings about mainly oxidation, whilst boration is very slight or even does not occur at all. Bright surface acicules of the diffusion layer forming during such a treatment consist of a solid solution of oxygen and titanium. Hardening from the saturation temperature does not change the acicular character of the micro-structure of the diffusion layer. When treating titanium with molten borax at an elevated temperature (1000 to 1050^{o}C) and high current densities (1.5 to 2.5 A/cm^2) a thin and very hard (2500 H_μ) non-etching layer forms at the titanium surface; however, application of such treatment brings about intensive damage of the specimen surface. In the case of borating of a titanium specimen containing 5% Cr in boron powder in vacuum at 1000 to 1050^{o}C a diffusion layer forms at the surface containing a thin non-etching surface zone of a high hardness (H_{V_5} = 1000 to 1150, micro-hardness exceeding 2200). The type of the

Surface hardening of titanium by treatment in molten borax.

lattice and the parameters of the surface zone of this layer correspond to the boride TiB; the disadvantage of this method is the high temperature required for the process. Hardening of the titanium can be effected at 800°C for durations of 6 to 9 hours in a bath containing borax and boron carbide; however, this method is suitable only for small components and, in addition, the surface hardness increases only by H_{V_5} = 200 to 250 and by 300 to 500 H_{μ}.

D. Barkaya, L. Zaitseva, I. Kokonina and M. Linchevskaya participated in the experiments.
There are 8 figures and 3 tables.

AVAILABLE: Library of Congress.

Card 5/5

MINKEVICH, A.N.

VLADISLAVEV, V.S.

25(1) p 4,7,8, PHASE I BOOK EXPLOITATION SOV/1439

Spravochnik metallista v pyati tomakh, t. 3, kn. 1 (Metals Engineering Handbook in Five Volumes, Vol. 3, Bk. 1) Moscow, Mashgiz, 1958. [illegible] p. 50,000 copies printed.

Ed. (Title page): V.S. Vladislavlev, Professor (Deceased); Ed. (Inside book): V.I. Krylov, Engineer; Tech. Ed.: T.F. Sokolova; Editorial Board: N.S. Acherkan (Chairman and Chief Ed.), Doctor of Technical Sciences, Professor, V.S. Vladislavlev, Professor (Deceased), A.N. Malov, Candidate of Technical Sciences, S.N. Poz[illegible], A.N. [illegible], S.B. Stalbin, and S.A. [illegible]; Managing Ed. for Reference Literature: V.I. Krylov, Engineer.

PURPOSE: The book is a reference book for technicians and engineers working in the field of machinery design and in production.

COVERAGE: The book covers the following: engineering specifications, treatment and use of cast iron, steel and carbides, heat treatment of steel and cast iron, specifications, treatment and use of nonferrous metals and nonmetallic materials. I.E. [illegible], V.P. Vologdin, N.V. [illegible] are mentioned as having contributed in this field.

Card 1/[illegible]

MINKEVICH, A. N.

ARISTOV, N.P., kand. tekhn. nauk,; BLAGOSKLONSKIY, T.I., kand. khim. nauk,; VESELOVSKIY, V.S., prof., doktor tekhn.nauk,; VLADISLAVLEV, V.S., prof.,[deceased]; GOSTEMINA, V.M., inzh.; GRINBERG, B.G., kand. tekhn. nauk,; KATTS, N.V., kand. tekhn. nauk,; KESTNER, O.Ye., kand. tekhn. nauk,; KIDIN, I.N., prof., doktor tekhn. nauk,; KIRSHENSHTEYN, Ye.L., inzh.; KITAYGORODSKIY, I.I., prof., doktor tekhn. nauk,; KOLOBNEV, I.F., kand. tekhn. nauk,; KRYLOV, V.V., kand. tekhn.nauk,; LAKHTIN, Yu.M., prof., doktor tekhn. nauk,; LEVI, L.I., kand. tekhn. nauk,; LEPETOV, V.A., kand. tekhn. nauk,; LUNEV, A.A., kand.tekhn. nauk,; LUNEV, F.A., kand. tekhn. nauk,[deceased]; LOTSMANOV, S.N., kand. tekhn. nauk,; MAURAKH, M.A., kand. tekhn. nauk,; MINKEVICH, A.N., kand. tekhn. nauk,; OCHKIN, A.V., inzh.; POPOV, V.A., kand. tekhn. nauk,; RAKOVSKIY, V.S., kand. tekhn. nauk,; SHESTOPAL, V.M., kand. tekhn. nauk,; ACHERKAN, N.S., prof., doktor tekhn. nauk, glavnyy red.; MALOV, A.N., red.; POZDNYAKOV, S.N., red.; ROSTOVYKH, A.Ya., red.; STOLBIN, G.B., red.; CHERNAVSKIY, S.A., red.; KRYLOV, V.I., inzh., red.; KARGANOV, V.G., inzh., red. graficheskikh rabot,; SOKOLOVA, T.F., tekhn. red.

[Metal worker's handbook in five volumes] Spravochnik metallista v piati tomakh. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry. Vol. 3. Book 1. 1958. 560 p. (MIRA 11:11)
(Metals--Handbooks, manuals, etc.)

SOV/129-59-4-10/17

AUTHORS: Minkevich A.N. (Candidate of Technical Sciences) and Ulybin, G.N. (Engineer)

TITLE: Chromating and Borating of Steel, Applying High Frequency Heating (Khromirovaniye i borirovaniye stali pri nagreve t.v.ch.)

PERIODICAL: Metallovedeniye i Termicheskaya Obrabotka Metallov, 1959, Nr 4, pp 48-51 (USSR)

ABSTRACT: The authors investigated processes of chromating and borating steel by means of chromium and boron-containing pastes and high-frequency heating. The experiments were carried out with 12 mm diameter specimens of the steels 20, 45 and U 10. The heating was effected with current supplied by a 60 kW, 350 kc/sec tube oscillator. The constancy of the temperature was ensured by means of a photo-electric pyrometer; the distance between the single turn inductor and the surface of the paste was about 1 - 2.5 mm. The paste consisted of a chromium or boron-containing powder and a fluxing medium. The following conclusions are arrived at: 1) For chromating by means of high frequency heating for a duration of 2 - 3 minutes at 1050 - 1200°C a paste consisting of 75% chromium powder or ferro-chromium and 25% cryolite with a hydrolized

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SOV/129-59-4-10/17

Chromating and Borating of Steel, Applying High Frequency Heating

ethyl-silicate as a binder, is suitable. A chromated layer 0.10 mm deep will be obtained by means of this method for steel 20, heated to 1200°C for 2 minutes, as compared to 8 - 10 hours' heating to 1050°C required in the case of the current method of chromating. However, the surface of the specimens is not always as good for this new method of chromating as it is for the ordinary method. 2) For borating of steels by high frequency heating at 1200°C for 2 - 3 minutes, a paste is suitable consisting of 50% boron carbide and 50% cryolite with hydrolised ethyl-silicate as a binder. Borating by means of this method of steels 45 and U-10 brings about the formation of a layer up to 0.12 mm thick with a hardness of about 1000 $H_{V_{10}}$. In the surface zone of the borated layer, borides of iron and boron carbide were detected by X-ray analysis. A layer of an equal depth (of a slightly different structure and of a slightly greater hardness) can be obtained by means of electrolysis at 950°C for 2 hours. Borating by means of the here-described method can be applied for

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Chromating and Borating of Steel, Applying High Frequency Heating

improving wear resistance of components.
3) The here-described method can also be used for other processes of chemical - heat treatment of steels and alloys.
There are 3 figures, 2 tables and 9 references, 5 of which are Soviet, 2 English and 2 Polish.

Card 3/3

MINKEVICH, A.N

27

PHASE I BOOK EXPLOITATION SOV/5457

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Sektsiya metallovedeniya i termicheskoy obrabotki metallov.

Metallovedeniye i termicheskaya obrabotka metallov; trudy Sektsii metallovedeniya i termicheskoy obrabotki metallov (Physical Metallurgy and Heat Treatment of Metals; Transactions of the Section of Physical Metallurgy and Heat Treatment of Metals) no. 2. Moscow, Mashgiz, 1960. 242 p. 6,000 copies printed.

Sponsoring Agency: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Tsentral'noye pravleniye.

Editorial Board: G. I. Pogodin-Alekseyev, Yu. A. Geller, A. G. Rakhshtadt, and G. K. Shreyber; Ed. of Publishing House: I. I. Lesnichenko; Tech. Ed.: B. I. Model'; Managing Ed. for Literature on Metalworking and Machine-Tool Making: V. I. Mitin.

PURPOSE: This collection of articles is intended for metallurgists, mechanical engineers, and scientific research workers.

COVERAGE: The collection contains articles describing results of research conducted by members of NTO (Scientific Technical Society) of the machine-building industry in the field of physical metallurgy, and in the heat treatment of steel, cast iron, and nonferrous metals and alloys. No personalities are mentioned. Most of articles are accompanied by Soviet and non-Soviet references and contain conclusions drawn from investigations.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (TN672.N34)

MINKEVICH, A. N.

"Boriding of Molybdenum, Tungsten, Columbium, and other Metals." (In the borided layer a microhardness of 2900-3200 Hv and more was obtained).

Paper presented at the All-Union Conference on Heat Treatment and Metal Science held in May 1960, Odessa.

MINKEVICH, A.N., kand.tekhn.nauk; KOTOV, A.N., inzh.

Thermochemical treatment of copper and brass for an increase in surface hardness and scale resistance. Trudy Sek.metalloved.i term. obr.met.NTO mash.prom. no.2:106-117 '60. (MIRA 14:4)
(Diffusion coating) (Copper--Corrosion)
(Surface hardening)

S/148/60/000/002/008/008

18 7520

AUTHORS: Minkevich, A.N., Gvozdev, A.G.

TITLE: Titanizing of Steel in a Molten Salt Bath

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1960, Nr 2, pp 151 - 156

TEXT: Information is given on results of experiments on titanizing of 08 and 50 grade steels in a molten salt bath. Titanizing was successfully performed at 950° and 1,100°C during 0.5 - 2 hours in a bath containing 80 - 90% molten sodium chloride and 10 - 20% fine granulated TiO_x alloy (containing about 10% (at.) O_2). Melting and utilization of the bath was conducted under an argon shield. It is desirable in further experiments to investigate the possible utilization of the bath without a shielding gas. It is also recommended to check the possibility of replacing the powder of a specially molten titanium alloy with oxygen by titanium powder contaminated with oxygen to about the required concentration. Without the indicated experiments the recommendation of an extended use of the aforementioned bath will be premature. The titanized layer formed on 08 steel in the bath consists of a

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Titanizing of Steel in a Molten Salt Bath S/148/60/000/002/008/008

thick layer of columnar grains separated from the core by a boundary line, and of a thin harder external zone. The columnar grains are solid solutions of titanium in α-iron. In a part of this zone, adjacent to the external thin zone, sometimes the separation of excessive titanides, precipitating during slow cooling, was observed. Data of spectral analysis, carried out under the supervision of V.G. Koritskiy, show that the external zone contains about 30% titanium. According to data from X-ray analysis, the external zone of the layer on 08 grade steel is $FeTi_2$ titanide; on 50 grade steel it is titanium carbide, TiC. The titanized layer formed on the steel in the investigated bath has high corrosion and acid resistance.
There are: 4 graphs, 2 sets of microphots, 1 table and 7 references, 2 of which are Soviet and 5 English.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: October 6, 1958

Card 2/2

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2208 |

83293

S/148/60/000/007/014/015
A161/A029

AUTHORS: Minkevich, A.N.; Rastorguyev, L.N.; Andryushechkin, V.I.

TITLE: Diffusion Boride Layers on Metals

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1960, Nr 7, pp 171-179

TEXT: Boride layer formation by diffusion on Mo, W, Nb, Zr and Ta was experimentally investigated. Three different boron-containing media were used: a molten borax bath (60% borax and 40% B_4C), powdered boron carbide and powdered boron metal. References are made to previous investigations, data of which were used /Ref 1-8/. The molten bath was used with a temperature of 1,100-1,300°C; boration in powder was carried out in vacuum with 1,300-1,500°C. The microstructures of boride layers are shown (Figure 4) in photographs, viz. microstructures after bath boration in the upper row, after boration in powder in the bottom row. The boride layers were 0.20 to 0.45 mm deep and had 1,300-2,000 Vickers hardness (with 5 kg load), and microhardness of 2,300-2,900 and higher. The most effective means

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S/148/60/000/007/014/015
A161/A029

Diffusion Boride Layers on Metals

proved to be boron metal; borax bath with 40% boron carbide had somewhat lesser effect, and boron carbide powder the least. Formation of phases was observed which are absent in the equilibrium state (TA_2B_5). Boration raised the acid resistance of molybdenum in nitrohydrochloric acid 15 times and of zirconium 12 times (in 21 hours at 20°C). The resistance to scale formation increased 21 times for Zr, 31 times for Ta and 14 times for Ti. The wear resistance of borated metals was dozens of times higher than that of non-borated ones and exceeded the wear resistance of case-hardened and quenched steel. The friction coefficient was reduced 1.5-2.0 times. There are 5 figures, 4 tables and 8 references: 4 are Soviet and 4 English.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: January 15, 1960

Card 2/2

26569
S/129/61/000/008/002/015
11800 E193/E335

AUTHOR: Minkevich, A.N., Candidate of Technical Sciences

TITLE: Diffusion-formed Boride Layers on Metals

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1961, No. 8, pp. 9 - 15 + 1 plate

TEXT: Growing interest in borides as engineering materials can be attributed to their outstanding wear-resistance, coupled with hardness higher and brittleness somewhat lower than that of carbides, nitrides and silicides. The object of the present investigation was to study the properties of boride layers formed on various materials in relation to the conditions which exist during their formation. Sintered Mo, W and Nb, cast and forged Ta, Re and Fe, and electrolytic Ni were used in the preparation of the experimental specimens. The surface boride layers were formed on these metals by four different methods: 1) by heating in a bath of molten borax containing approx. 40% boron carbide; 2) by heating in vacuum (5 x 10⁻⁴ mm Hg) in contact with boron carbide; 3) as in method (2) but with boron

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S/129/61/000/008/002/015
E192/E335

Diffusion-formed ....

powder used as the boriding medium. 4) by electrolysis in molten borax. The temperature of the process was chosen to be below the minimum solidus temperature of any particular metal-boron system. X-ray diffraction analysis of the boride layers formed on Co and Fe showed that the kinetics of the process was the same in both cases. Needle-like crystals of Fe_2B and Co_2B were formed first; they had a tetragonal lattice and approx. the same (8.8 and 8.9%, respectively) boron content. As the concentration of boron in the surface layer increased, needles of FeB or CoB (containing 16.0 and 15.5% B, respectively) were formed. FeB and CoB had microhardness values of 2 000 and 1 850 kg/mm^2, the corresponding figures for Fe_2B and Co_2B being 1 850 and 1 550 kg/mm^2. In Fig. 3 the microhardness (kg/mm^2) of the surface boride layers, formed on Co at 950 °C, is plotted against the distance (mm) from the surface; diagrams (a) and (b) relate to specimens with boride layers formed respectively by 3 and 6 hours treatment in a molten borax-boron carbide mixture (Curves K) and by electrolysis in molten borax (Curves Э). It will be seen from Fig. 3 that the electrolytic method is more
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efficient since in 3 h it produced a boride layer containing both Co_2B and CoB, whereas only Co_2B was formed by 6 h diffusion from the borax/boron carbide mixture. In Fig. 5 the thickness (mm, top diagram) of the boride layer formed on various metals (indicated by each curve), Brinell hardness (kg/mm^2, middle diagram) and microhardness (kg/mm^2, bottom diagram) are plotted against the duration of the process (hours at 1 400 °C, lefthand-side diagrams) and against its temperature (°C, right-hand-side diagrams), the duration of the process in the latter case being 2 h. Fig. 6 shows how the microhardness (kg/mm^2) of boride layers formed on the surface of various metals (as indicated by each curve) varied with the distance (mm) from the surface; in this case, the boride layers were formed by vacuum treatment in boron carbide, the three graphs (from left to right) relating to specimens obtained, respectively, by 2, 4 and 6 h treatment. The following conclusions were reached from the results shown in Figs. 5 and 6: 1) irrespective of the conditions during the boriding treatment, the thickest boride layer is obtained on Mo, much thinner on W and Nb and thinnest on Zr, Ta and Re; 2) boride layer formed on Ta is the hardest (Brinell hardness of 2 000 - 2 200 kg/mm^2, microhardness of 3 000 - 3 200 kg/mm^2); 3) in most cases, the surface hardness of boride layers increases with increasing duration and temperature of the boriding treatment. X-ray diffraction analysis of boride layers formed by vacuum diffusion from boron carbide (1 h at 1 400 °C) showed them as having the following constitution: Mo_2B_5 and Mo_2B (weak lines) on Mo; W_2B, W_2B_5 (weak lines), and WB (very weak lines) on W; NbB_4 and Nb_2B_4 (weak lines) on Nb; ZrB_2 and Zr_2B (weak lines) on Zr; Ta_2B on Ta; ReB on Re. The constitution of boride layers, formed in a molten borax/boron carbide mixture, was similar except that the X-ray lines of the boron-rich constituents were stronger. Comparison of the microstructure of boride layers, formed on

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various metals, showed that the needle-like crystals are formed on Fe, Co and Ni only; in all other cases, the diffused boride layers have a monolithic structure. The wear resistance of the materials studied was measured on an Amsler machine under a load of 50 kg. The experiments consisted of rotating ring-shaped specimens of hardened steel У10 (U10) (Rockwell hardness - 62 C), pressed against similar specimens of borided metals or carburized steel 30ХГТ (30KhGT) (Rockwell hardness - 62 to 64 C) and measuring the weight loss after 2 h testing (without lubrication). The wear-resistance of borided metals was found to be considerably higher than that of other materials the weight losses (g/m^2) of specimens tested being: 0.046 on carburized steel 30 KhGT; 0.024 on borided steel U10; 0.0175 on borided tungsten; 0.0148 on borided molybdenum; 0.012 on borided niobium. Heat-resistance of borided metals was studied by examining the surface condition and measuring the changes in weight of specimens, held for 24 h at 950 °C. Although borided metals showed considerable improvement in comparison with untreated specimens, it was found that boriding offers no

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S/129/61/000/008/002/015
E193/E335

Diffusion-formed ....

effective protection against oxidation at elevated temperatures. The results of the next series of tests in which borided and untreated specimens were held for 21 h in a HCl/HNO_3 mixture at 20 °C showed that the resistance of Mo and Zr to the corrosive action of this medium was increased after the boriding treatment by a factor of 15 and 12, respectively. Finally, the hot hardness of some borided metals was measured. The results are reproduced in Fig. 8, where Vickers hardness (kg/mm^2) of borided Mo and Nb is plotted against the test temperature (°C) side-by-side with similar curves, constructed for cemented carbides T5K10, T15K6, ВК3 (VK3) and ВК6 (VK6), and a high-speed cutting steel Р18 (R18). V.I. Andryushechkin, Ye.V. Akulinichev, N.F. Shur and L.N. Rastorguyev participated in this work. There are 8 figures and 15 references: 1 Soviet and 4 non-Soviet. The three English-language references quoted in the text are: Ref. 7 - A.B. Laubenganer, D.H. Hard, A.E. Neweira - J. Am. Chem. Soc., No. 63, 1943; Ref. 8 - I. Kompbell, C. Powell, D. Novick, B. Conser - J. Electrochem. Soc., v. 96, 1959; Ref. 9 - W. Beck - Metal Industry, v. 86, 1955.

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26569
S/129/61/000/008/002/015
E193/E335

Diffusion-formed ....

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

Fig. 3:

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MINKEVICH, Anatoliy N.

"The enrichment in boron of cobalt and cobalt alloys"
Report to be submitted for the Ninth International Discussion on Heat Treating, Lausanne, Switzerland, 28-30 May 1962

Institute of Steel, Moscow

MINKEVICH, A.N.

AID Nr. 985-9 7 June

D. K. CHERNOV, AND N. A. MINKEVICH PRIZES FOR 1962 (USSR)

Golovin, A. F., and A. N. Minkevich. Metallovedeniye i termicheskaya obrabotka metallov, no. 4, Apr 1963, 63-65. S/129/63/000/004/014/014

The Scientific and Technical Society of the Machine-Building Industry has announced the results of the All-Union Competition for the Chernov and Minkevich prizes for 1962. The first Chernov prize was awarded to Yu. A. Bagaryatskiy, G. I. Nosova, and T. V. Tyagunova for studies in the x-ray diffraction analysis of the phase transformation in titanium alloys and the structural mechanism of alloy aging. The authors discovered previously

Card 1/2

AID Nr. 985-9 7 June

D. K. CHERNOV AND N. A. MINKEVICH (Cont.)

S/129/63/000/004/014/014

unknown α'' and ω phases which have a significant effect on the mechanical properties of titanium alloys. The second Minkevich prize [a first prize was not awarded for 1962] was awarded to N. I. Korneyev, V. F. Kalugin, Yu. N. Kabanov, S. B. Pevzner, and I. G. Skugarev for their work "Development of the thermomechanical processes of steel strengthening by rolling and pressing." The authors determined the optimum conditions of thermomechanical treatment for structural steels and suggested and tested a low-temperature thermomechanical treatment (ausforming) by rolling in envelopes. They also studied the effect of the number of passes in rolling on the work hardening of supercooled austenite. Ausforming has been introduced into industrial practice. [AZ]

Card 2/2

L 11199-63 EWP(q)/EWT(m)/BDS--AFFTC/ASD--JD
ACCESSION NR: AP3001380 S/0148/63/000/005/0162/0167

53

AUTHOR: Minkevich, A. N.

TITLE: Structure of boride layers

SOURCE: IVUZ. Chernaya metallurgiya, no. 5, 1963, 162-167

TOPIC TAGS: boride layers, iron, carbon steel, surface treatment, martempering

ABSTRACT: The structure and properties of boride layers forming on iron and carbon steel were studied. From determination of stresses formed, it was found that boride bath layers do not decrease surface stresses after hardening. Rather, the degree of distension which develops is a function of gage of steel and other factors. Surface treatment or martempering of boride bathed steel is recommended in order to decrease stresses. Orig. art. has: 6 figures.

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Institute of Steel and Alloys)

SUBMITTED: 10Aug62 DATE ACQD: 01Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 004 OTHER: 002

Card 1/1

DUBININ, G.N.; BOKSHTEYN, S.Z., doktor tekhn. nauk, prof., retsenzent; GRIBOYEDOV, Yu.N., kand. tekhn. nauk, retsenzent; MINKEVICH, A.N., kand. tekhn. nauk, red.

[Diffusion chromizing of alloys] Diffuzionnoe khromirovanie splavov. Moskva, Mashinostroenie, 1964. 450 p. (MIRA 17:11)

L 24889-65 EWT(m)/EWA(d)/T/EWP(t)/EWP(b) IJP(c) JD/JG/WB/MLK

ACCESSION NR: AT5002787 S/0000/64/000/000/0221/0225 23

B+1

AUTHOR: Minkevich, A. N.; Tylkina, M. A. (Candidate of technical sciences); Rastorguyev, L. N.; Rodionova, G. P.

TITLE: Thermochemical treatment of rhenium

SOURCE: Vsesoyuznoye soveshchaniye po probleme reniya. 2d, Moscow, 1962. Reniy (Rhenium); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1964, 221-225

TOPIC TAGS: rhenium, rhenium diffusion coating, rhenium coating, rhenium chromizing, rhenium boronizing, rhenium aluminizing, rhenium siliconizing, diffusion coating property, rhenium oxidation

ABSTRACT: Certain properties and structures of diffusion layers formed by impregnation of rhenium with chromium, boron, aluminum, and silicon have been investigated. Aluminizing, chromizing, and siliconizing of rhenium were done by pack cementation at 1000, 1100, and 1200C in a mixture of 40 parts chamotte powder, 60 parts of the respective metal powder, and 3 parts ammonia chloride. Boronizing was done at 1000 and 1200C in a fused-salt bath consisting of 70% sodium tetraborate and 30% boron-carbide powder, or by pack cementation at 1400C in boron-carbide powder in a vacuum

L 24889-65

ACCESSION NR: AT5002787

0

furnace. Diffusion layers with clearly visible boundary lines were formed in all media tested. Boronized case was 0.06—0.14 mm thick and consisted of two layers, Re_7B_3 compound inside and ReB_3 compound outside. The highest hardness, H_v = 1200 kg/mm^2, was obtained by pack cementation at 1400C. Siliconized case contained $ReSi_2$ and ReSi silicides. Its hardness was 927 = 1400 kg/mm^2. Chromizing yielded an α-phase case of rhenium solid solution in chromium. A diffusion layer containing Al_2Re_3 and Al_2Re compounds was formed by aluminizing. Oxidation-resistance tests carried out at 800C for 10 hr showed that chromized rhenium has the highest resistance (see Fig. 1 of the Enclosure). Orig. art. has: 3 figures and 2 tables. [ND]

ASSOCIATION: none

SUBMITTED: 05Aug64 ENCL: 01 SUB CODE: IC, MM

NO REF SOV: 003 OTHER: 001 ATD PRESS: 3181

Card 2/3

MINKEVICH, A.N.

Trends in the development of thermochemical processes for the treatment of metals and alloys. Metalloved. i term. obr. met. no.3:4-9 Mr '64. (MIRA 17:4)

L 11305-65 EWT(m)/EWA(d)/EWP(t)/EWP(b) MJW/JD

ACCESSION NR: AT4043506 S/3107/64/000/003/0030/0041

AUTHOR: Minkevich, A. N. (Candidate of technical sciences, Docent); Shur, N. F. (Engineer); Trekalo, A. S. (Engineer)

TITLE: Boriding of cobalt and cobalt-base alloys

SOURCE: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promy*shlennosti. Sektsiya metallovedeniya i termicheskoy obrabotki. Metallovedeniye i termicheskaya obrabotka, no. 3, 1964, 30-41

TOPIC TAGS: cobalt boriding, cobalt alloy boriding, boriding layer composition, boriding layer structure, boriding layer hardness, boriding layer corrosion resistance, boriding layer wear resistance

ABSTRACT: The possibility of increasing the hardness of cobalt and cobalt-base K40NKhM, K40Kh20, and 36NKhTYu alloys by boriding has been studied. Boriding was done by electrolysis in molten borax at ... boron carbide at 950—1100C;

been studied. ... with 30—40 wt% boron carbide at 950—1000C,
950C or in molten borax with 30—40 wt% boron carbide ... It was found that boriding
the boriding process lasted up to 6 hr. ... the first
of Co by the second method took about twice as long as the first
method, but it produced a clean surface. The borided layer, 0.24 mm

thick after 3-hr boriding at 1000C, consisted of an outer layer of CoB boride with 15.51% boron; it had a rhombic lattice and a microhardness of H_{100} 1800. An inner layer of Co_2B boride with 8.41% B, located at a depth of 0.07 mm below the surface, had a tetragonal lattice and a microhardness of H_{100} 1550. Boriding of Co-base alloys proceeds at a slower rate than boriding of Co, e.g., boriding at 1000C for 3 hr produced a borided layer 0.03 mm thick on K40NKhM alloy and 0.05 mm thick on K40Kh20 alloy. The borided layers on these alloys had approximately the same microhardness, H_{100} 2300. The thickness of the borided layer and the magnetic susceptibility of the alloys increased with increased boriding time. Boriding also increased the wear resistance of cobalt and its alloys. For example, a 6-hr boriding at 1000C increased the wear resistance of Co 48 times, of K40KhNM alloy, 70 times, and of K40Kh20 alloy, more than 100 times. However, the corrosion resistance of borided alloys under tropical conditions is noticeably lower than that of unborided alloys. Orig. art. has: 8 figures and 6 tables.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promy*shlennosti (Scientific Technological Society of Machine Construstion Industry)

promy*shlennosti (Scientific Technological Society of Machine Construction Industry)

Card 2/3

L 11305-65

ACCESSION NR: AT4043506

SUBMITTED: 00 ATD PRESS: 3108 ENCL: 00

SUB CODE: MM NO REF SOV: 005 OTHER: 000

Card 3/3

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134420009-7"

L 26095-65 EWT(m)/EPF(n)-2/T/EWP(t)/EWP(b) Pu-4 IJP(c) JD/JG

ACCESSION NR: AP4049075 S/0148/64/000/011/0185/0188

AUTHOR: Shcherbedinskaya, A.V.; Minkevich, A.N.

23
20
B

TITLE: Diffusional saturation of molybdenum with carbon

SOURCE: IVUZ. Chernaya metallurgiya, no. 11, 1964, 185-188

TOPIC TAGS: molybdenum saturation, carbon diffusion, diffusional saturation, molybdenum carbide, molybdenum diffusion

ABSTRACT: The article reports the results of a study of the diffusion of carbon in molybdenum carbide. The diffusional saturation of the latter was carried out with C14-labeled $BaCO_3$. Subsequent radiometric layer analysis yielded the concentration curves of the distribution of carbon in molybdenum carbide. The diffusion coefficients ... in the range 900-1600C. They formed a straight line in the

[illegible]-labeled [illegible] of carbon in molybdenum carbide. The diffusion coefficients curves of the distribution of carbon were determined in the range 900-1600C. They formed a straight line in the coordinates log D - 1/T; from the slope of this curve, the activation energy was found to be 67000 ± 5400 cal/g-at. To elucidate the mechanism of carbide formation, the authors also studied the diffusion of radioactive molybdenum Mo^{99} in molybdenum carbide, and concluded that when the latter is formed in the carbon — molybdenum system, the predominant diffusion is that of carbon. Orig. art. has: 3 figures, 1 table, and 2 formulas.

Card 1/2

L 26095-65

ACCESSION NR: AP4049075

ASSOCIATION: Moskovskiy institut stali i splavov (Moscow Steel and Alloys Institute)

SUBMITTED: 21Jul64 ENCL: 00 SUB CODE: MM

NO REF SOV: 001 OTHER: 001

Card 2/2

L 23223-66 EWT(m)/T/EWP(t) IJP(c) JD/HW

ACC NR: AP6013599 SOURCE CODE: UR/0148/65/000/001/0095/0098

AUTHOR: Shovensin, A. V.; Minkevich, A. N.; Shcherbedinskiy, G. V.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Diffusion of carbon into cobalt and nickel

SOURCE: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 1, 1965, 95-98

TOPIC TAGS: cobalt, nickel, austenite, carbon, radioisotope, metal diffusion, radioactivity measurement

ABSTRACT: In connection with the influence of alloying elements on the diffusion of carbon into austenite, the authors studied the diffusion of carbon into alloying elements cobalt and nickel in the range of 700-1000°C. Radioactive carbon C^{14} was used, and the distribution of concentration per depth was measured. The conditions of homogenizing, to which the samples of cobalt and nickel were subjected, and the corresponding diffusion coefficients are tabulated. These data were used to plot the temperature dependence of the diffusion coefficients of carbon in cobalt and nickel. The values of the free energy Q and pre-exponential coefficient D_0 obtained from these plots differ from those given in the literature, and the authors defend their results by pointing out the improvements involved in their approach to the problem. Orig. art. has: 4 figures, 3 formulas, and 1 table. [JPRS]

SUB CODE: 11, 18 / SUBM DATE: 16Dec63 / ORIG REF: 003 / OTH REF: 002

Card 1/1 UDC: 669.24: 669.25

L 9639-66 EWT(m)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) MJW/JD

ACC NR: AP5027710 SOURCE CODE: UR/0129/65/00/011/0037/0038

AUTHOR: Semenova, G. A.; Minkevich, A. N.; Panchenko, Ye. V.; Maslenkov, S. B.;

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Titanium carbide coatings deposited on steel

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 11, 1965, 37-38, and top half of insert facing p. 41

TOPIC TAGS: metal coating, carbide, titanium compound, metal bonding, metal diffusion, steel, annealing

ABSTRACT: A study of the deposition of TiC coatings on steel is presented. Specimens of 08 kp steel were coated with TiC in a current of H_2, vapors of $TiCl_4$ and benzene, in a tubular furnace, at 1100°C for 0.5 hr. To improve the adhesion of the coating to the steel, the specimens were subsequently diffusion-annealed in H_2 atmosphere for 6 hr. After this, measurements of microhardness and micro-thermo-e.m.f. as well as laminar X-ray spectral chemical analysis were carried out. Findings: Fe was discovered in the TiC layer in the amount of 12% at the depth of 3 μ from the coating-base metal boundary and in the amount of 0.8% at 6 μ depth. Ti, on the other hand, penetrated into steel to a depth of more than 5 μ from the interface. Some limited decrease in microhardness of the coating with depth was detected. Since, intermediate coatings of

Card 1/2 UDC: 621.357.76:669.14.018

L 9639-66

ACC NR: AP5027710

galvanically deposited metals greatly affect the bonding of deposited coating to the base metal, corresponding experiments also were performed. In this case it was found that the hardness of TiC does not vary with depth. This may be attributed to the formation of TiCr at the TiC-Cr boundary. Below that line hardness gradually decreases owing to the change in the solid-solution concentration of Cr in Fe. The visible interface corresponds to the boundary between the α- and γ-phases at annealing temperature (1000°C in this case). Thus, the deposition of TiC on steel and subsequent diffusion annealing result in a redistribution of elements in the boundary regions, which contributes to a stronger bonding of coating to base. The micro-thermo-e.m.f. method is a good complement to the regular methods of investigating diffusion processes. Orig. art. has: 2 figures.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 000

Card 2/2

L 13531-66 EWT(m)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD/JG

ACC NR: AP5028980 SOURCE CODE: UR/0149/65/000/004/0123/0125

AUTHOR: Shcherbedinskaya, A. V.; Minkevich, A. N.

ORG: Moscow Institute of Steel and Alloys, Metal Science of Steel and High Strength Alloys Dept (Moskovskiy institut stali i splavov, Kafedra metallovedeniya stali i vysokoprochnykh splavov)

TITLE: Diffusion of carbon in the carbides of niobium and titanium

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 4, 1965, 123-125

TOPIC TAGS: thermal diffusion, carbon, titanium, niobium, periodic system, activation energy

ABSTRACT: A comparison of the diffusion parameters of nonmetals in refractory metals as a function of their position in the periodic table is of interest. In this connection, the article presents the results of an investigation of the diffusion of C in elements located in different groups of the periodic table: Ti (IV), Nb (V) and Mo (VI) The findings on the diffusion of C in Mo are presented in another study (A. V. Shcherbedinskaya, A. N. Minkevich, Izv. VUZ, Chernaya metallurgiya, no. 11, 1964). The diffusion coating of Nb and Ti with C was performed at 900-1500°C in a mixture of acti-

Card 1/2 UDC: 669.293+669+295

L 13531-66

ACC NR: AP5028980

vated carbon and $BaCO_3$ containing the radioactive isotope C^{14}, with subsequent radiometric analysis of the obtained carbide coatings and plotting of the concentration curves for C throughout the diffusion zone. After this, the diffusion coefficients were calculated from the concentration curves. It is established that the activation energy for the diffusion of C in the carbide of Ti (element of group IV) is higher than in the carbides of Nb (E = 64,500 cal/g-atom) and Mo (E = 83,000 cal/g-atom) (groups V and VI, respectively), which is in qualitative agreement with Dempsey's (Philos. Mag., 8, no. 86, 1963) theory of the electron structure of transition metals which claims that the maximum melting point is inherent in the compounds for which the number of d-electrons per atom is ≈6 and that formation of solid compounds with elements of group IV results in the increase in the number of d-electrons per atom to its optimal value (≈6) and hence also in a corresponding sharp increase in melting point. For elements of group VI, which have the optimal number of electrons per atom, the formation of chemical compounds is associated with the increase in this number and decrease in their melting points. Orig. art. has:

SUB CODE: 07, 11, 20/ SUBM DATE: 10Apr64/ ORIG REF: 003/ OTH REF: 002

Card 2/2

L 12077-66 EWP(e)/EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) MJW/JD/WH

ACC NR: AP6000177 UR/0148/65/000/009/0168/0170

55 B

AUTHOR: Semenova, G. A.; Minkevich, A. N.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Deposition of titanium carbide from gaseous phase onto the surface of steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 9, 1965, 168-170

TOPIC TAGS: metal deposition, titanium carbide, hydrogen, benzene, metal coating, tool steel, titanium compound / Kh12 tool steel

ABSTRACT: In view of the great difference in the thermal expansion coefficients of TiC and various steels ($\alpha_{TiC} = 7.74 \cdot 10^{-6}$ 1/deg against $\alpha = 10 \cdot 10^{-6}$ to $20 \cdot 10^{-6}$ 1/deg), the steel chosen as the substrate for the deposition of TiC was Kh12 tool steel with an expansion coefficient extremely close to that of TiC ($\alpha_{Kh12} = 10 \cdot 10^{-6}$ 1/deg). TiC was obtained from the following source reagents: $TiCl_4$, H_2 and C_6H_6. The deposition was carried out in a quartz tube of 22 mm diameter placed in a continuous furnace with silit heaters. H_2 was dried with P_2O_5. Reagent vapors were admitted to the reaction tube by passing H_2 through $TiCl_4$ and C_6H_6. The deposition of TiC on the steel specimens was carried out for 30 min at 1100°C, with subsequent measurements of the thickness and microhardness of the coating. Based on the experimental findings, the optimal regime of TiC deposition corresponds to a H_2 feed rate of $v_{H_2} = 0.8$ liter/min,

UDC: 669.14-16

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L 12077-66

ACC NR: AP6000177

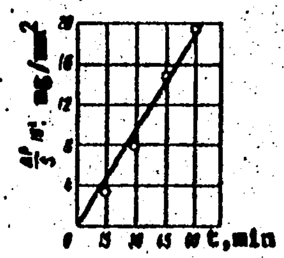

Fig. 1. Weight gain of specimens as a function of duration of the process of TiC deposition (temperature 1100°C)

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L 12077-66

ACC NR: AP6000177

and a partial pressure of reagent vapors amounting to $p_{TiCl_4} = 2.5 \cdot 10^{-2}$ atm and $p_{C_6H_6} = 1.5 \cdot 10^{-2}$ atm. The shape of the curve of the time dependence of the weight gain of specimens (Fig. 1) indicates that formation of the carbide coating occurs owing to its accretion from the gaseous phase without participation of the substrate material. The coating may be one micron to several millimeters thick depending on duration of the process. Thin carbide films (of the order of 10 μ) do not crack regardless of the cooling rate, while thicker films are crackproof only if the cooling rate is very slow. The deposited TiC represents a compact layer that satisfactorily adheres to the metal surface and has a microhardness of 3500 kg/mm². Orig. art. has: 4 figures.

SUB CODE: 11, 13/ SUBM DATE: 20Nov64/ ORIG REF: 001/ OTH REF: 002

Card 3/3

L 28513-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/WB

ACC NR: AP6016593 (A,N) SOURCE CODE: UR/0129/66/000/005/0049/0052

44
B

AUTHORS: Sorokin, Yu. V.; Minkevich, A. N.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Nitriding steel in a mixture of nitrogen and ammonia

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1966, 49-52

TOPIC TAGS: alloy steel, metallurgic process, nitrification, nitridation, corrosion resistance/ 4Kh14N14V2M alloy steel, 25Kh18N8V2 alloy steel, Kh17G9AN4 alloy steel, 38KhMYuA alloy steel, 35KhMYuA alloy ateel

ABSTRACT: The effect of nitriding the alloy steels 4Kh14N14V2M, 25Kh18N8V2, Kh17G9AN4, 38KhMYuA, and 35KhMYuA in a mixture of 20—30% ammonia and 80—70% nitrogen on the hardness, brittleness, depth, and corrosion stability of the nitride layer was investigated. The microstructure of the surface layer was also studied. The experimental results are presented in graphs and tables (see Fig. 1). Dilution of ammonia with nitrogen (up to 80% nitrogen) had no effect on the hardness or depth of the nitride layers and slightly increased the corrosion stability and fatigue limit. The results of corrosion experiments are in good agreement with the results of A. G. Andreyeva and L. Ya. Gurevich (MiTOM, 1959, No. 4). It is concluded that the best nitriding results are obtained with a mixture of 20—30% ammonia and 80—70% nitrogen.

 UDC: 621.785.53:546.17:546.171.1

L 28513-66

ACC NR: AP6016593

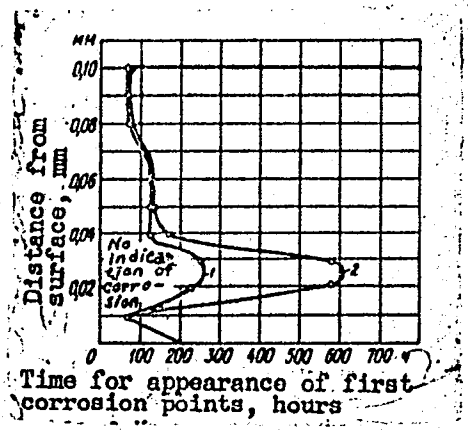

Fig. 1. Change in the corrosion stability along the depth of the nitride layer in steel 4Kh14N14V2M exposed to sea water.
1 - nitriding in ammonia (depth of layer 0.1 mm);
2 - in mixture of 70% N_2 + 30% NH_3.

Orig. art. has: 1 table and 3 figures.

SUB CODE: 11, 07/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 001

Card 2/2

L 44396-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6024529 SOURCE CODE: UR/0148/66/000/007/0143/0146

AUTHOR: Rastorguyev, L. N.; Kovalev, A. I.; Minkevich, A. N.

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov)

TITLE: Structure of the diffusion layer in carboantimonized steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 7, 1966, 143-146

TOPIC TAGS: antimonide, surface hardening, metallographic examination, microhardening, x ray diffraction analysis, crystal orientation, thermal emf

ABSTRACT: Carboantimonizing of type 20 steel and Armco iron was studied and compared with the more typical cemetizing process. All samples were treated in a Bandyuzhskiy carbonizer at 950°C for 6 hrs. A mixture of 10% Na_2CO_3 and 0.75% Sb_2O_3 was added for carboantimonizing; 10% Na_2CO_3 was added for cemetizing. Microstructures showed a light-etching layer in the carboantimonized samples which was harder and thinner than the cemetized layer. The microthermal emf method developed at the Moscow Institute of Steel and Alloys was used to study the diffusion layers. Antimony decreased the electronegativity of microthermal emf and above 2.7% Sb, the microthermal emf became more positive (F=0.7 v/°C at 3.25% Sb). Changes in microthermal emf are given as functions of layer thicknesses for cementing and carboantimonizing, the latter with 0.75% and 2.5% Sb_2O_3 added to the carbonizer. The Sb content of the layer was greater for 2.5%

UDC: 669.18.046.56:669.75:621.785.53

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L 44396-66

ACC NR: AP6024529

Sb_2O_3 additions. The drop in microthermal emf from the periphery to the center indicated a decrease in Sb and C content; this was confirmed by microprobe analysis. The Fe distribution rose from 10% at the surface to 100% at 120 μ. After water quenching from 850°C, the carboantimonized surface layers reached a Shore hardness of 1000 Hv, which was 100-200 Hv higher than for cemented layers. This was attributed to the presence of FeSb and $FeSb_2$ phases, confirmed by x-ray powder analysis. Calculated cell volumes of both phases were 7-10% lower than the equilibrium values, due to the supersaturation of Sb in the phases formed by diffusion. No preferred orientation was found in the diffusion surfaces since no preferential diffusion path existed for Sb. Microthermal emf experiments were carried out in consultation with Ye. V. Panchenko, microprobe analysis was done at TsNIIChM by S. B. Maslenkin. Orig. art. has: 3 figures, 1 table.

SUB CODE: 11,20 / SUBM DATE: 11Apr64/ ORIG REF: 005/ OTH REF: 001

Card 2/2

L 09133-67 EWT(m)/EWP(t)/ETI IJP(c) JD/HW/JG

ACC NR: AP6032055 (N) SOURCE CODE: UR/0148/66/000/009/0158/0161

AUTHOR: Yusfina, L. I.; Minkevich, A. N.; Rastorguyev, L. N.; Sidokhina, N. B. 34

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov) 33

TITLE: Producing nickel boride and cobalt boride layers on iron

SOURCE: IVUZ. Chernaya metallurgiya, no. 9, 1966, 158-161

TOPIC TAGS: nickel compound, cobalt compound, x ray diffraction analysis, microhardening, boride

ABSTRACT: The authors plated the surfaces of Armco iron specimens with a 70-100 μ thick layer of nickel and cobalt. These specimens were tested for 1-6 hours at 950°C in a bath composed of 60% molten borax and 40% carbide or in a melt of borax using electrolysis. A thick boride layer was formed on all specimens which went through the first bath under all processing conditions. The thickness of the boride layer increases with time of treatment. After holding from 1 to 3 hours, the nickel boride layer still consists of one zone. After 4 hours of holding, two zones appear in the layer. X-ray diffraction analysis shows that these zones correspond to NI_3B_2 and Ni_2B. This process is much quicker in the case of electrolytic plating. The intermediate layer cannot be observed after 3 hours of holding. A figure is given showing the microhardness of all the phases formed in the surface layers. A study of the boride layer shows an acicular microstructure. The length of the boride needles

 UDC: 669.18:621.785:53

L 09133-67

ACC NR: AP6032055

varies, and in some places they pierce both the cobalt layer and the iron. X-ray diffraction analysis shows that the cobalt content at the surface is 91-92% in those places where the boride needles do not penetrate the iron. Cobalt concentration approaches 100% at a given distance from the surface and then decreases sharply. This shows that cobalt penetrates iron to a depth of 10 μ which cannot be observed in studying microstructure or microhardness. A completely different picture is seen where the needles penetrate the entire cobalt layer. The microhardness of these needles varies along their entire length. At the surface their microhardness is from 1250-1580 kg/mm^2 and 1680-2050 kg/mm^2 at their ends. Iron content at the ends of the needles reaches 92-88%. At the same time, cobalt content in these places is only 10-2%. As can be seen, the boride needles which penetrate the iron mainly represent boride with admixtures of cobalt and iron. Iron content diminishes in the boride toward the surface, the needles consisting basically of Co_2B. On the other hand, Fe_2B is found in the specimens in the center layer. Orig. art. has: 5 figures.

SUB CODE: 11/ SUBM DATE: 15Feb66/ ORIG REF: 005/ OTH REF: 001

Card 2/2 not

ACC NR: AM6014726 Monograph UR

Minkevich, A. N.

Chemical and thermal treatment of metals and alloys (Khimiko-termicheskaya obrabotka metallov i splavov) 2d ed., rev. Moscow, Izd-vo "Mashinostroyeniye", 1965. 490 p. illus., biblio. Errata slip inserted. 6500 copies printed.

TOPIC TAGS: metal surface impregnation, thermochemistry, metal diffusion, refractory metal, cyanidation, nitridation

PURPOSE AND COVERAGE: This book is intended for engineering personnel and scientific workers specializing in the field of thermochemical treatment. It may also be useful to students of schools of higher education, who study the thermal treatment of metals. The book briefly outlines general laws governing diffusion processes and methods of obtaining diffusion layers in metals. It reviews processes of carburizing, nitrocarburizing, cyanidation, nitriding, aluminizing, chromizing, boronizing and zinc plating of steel as well as processes of impregnation of steel surface with beryllium, silicon, titanium, vanadium, molybdenum, tungsten, niobium, manganese, sulfur and some

Card 1/8 UDC: 621.78.794

ACC NR: AM6014726

other elements. Processes of thermochemical treatment of titanium, molybdenum, niobium, tungsten, tantalum, zirconium, nickel, copper, cobalt and their alloys are discussed. Brief outlines of processes of thermochemical treatment of sintered alloys, electroplating and semiconductor materials are given and conditions of depositing carbides, borides, nitrides and silicides on the metal surface are reviewed. For each type of treatment the methods of impregnation, chemical aspects of impregnation, effect of various factors on the impregnation as well as the structure and properties of metals and alloys resulting from treatment are indicated.

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Card 6/8

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SUB CODE: 11/ SUBM DATE: 5Nov65/ ORIG REF: 396/ OTH REF: 202/

APPROVED FOR RELEASE: 06/14/2000 CIA-RDP86-00513R001134420009-7"

ACC NR: AP6036899 (A) SOURCE CODE: UR/0226/66/000/011/0046/0051

AUTHOR: Shovensin, A. V.; Shcherbedinskiy, G. V.; Minkevich, A. N.

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

TITLE: Characteristics of carbon diffusion in molybdenum carbide

SOURCE: Poroshkovaya metallurgiya, no. 11, 1966, 46-51

TOPIC TAGS: molybdenum carbide, carbon diffusion, thermal diffusion, diffusion, diffusion saturation

ABSTRACT: Temperature relationships are determined for the self-diffusion and heterodiffusion coefficients of carbon in mulybdenum carbide, expressed by the ratio $D = 0.3 \exp(-67{,}000\ RT)\ cm^2/sec$ and $D = 3 \cdot 17 \cdot 10^3 \exp(-78{,}000\ RT)\ cm^2/sec$, respectively. The heterodiffusion coefficients, at temperatures investigated, exceed the self-diffusion coefficients by approximately two orders of magnitude. The difference in diffusion coefficients can be explained by a strong dependence of the thermodynamic activity on the concentration of carbon in molybdenum carbide. Orig. art. has: 6 formulas and 4 figures. [Based on authors' abstract] [NT]

SUB CODE: 11/SUBM DATE: 20Dec65/ORIG REF: 003/

Card 1/1

14(10) SOV/112-59-3-4685

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 3, p 55 (USSR)

AUTHOR: Minkevich, B. I.

TITLE: Setting Conditions of Mortar Placed on a Concrete Surface (Usloviya tverdeniya tsementnogo rastvora, pomeshchennogo na betonnuyu poverkhnost')

PERIODICAL: Tr. Sredneaz. n.-i. in-ta irrigatsii, 1957, Nr 90, pp 105-107

ABSTRACT: A thin coating of mortar on a concrete surface quickly loses water; this fact impairs the normal course of cement hydration. To determine the effect of quantitative water losses on concrete strength, a number of experiments, 12 times each, were stages. Plastic mortar of 1:3 composition (by weight) was placed as a 2-cm layer on the grade-200 concrete. It was found that evaporation alone causes the mortar to lose 68% of the mix water over the first 24 hours; capillary suction alone causes the loss of 35%; both causes, 70%. To attain the normal humid setting of mortar, it is recommended that insulating films be combined with quick-setting mortar of high-water retaining ability.

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SOV/112-59-3-4685

14(10)

Setting Conditions of Mortar Placed on a Concrete Surface

Experiments with the Khilok Plant cements established the effectiveness of introducing 8% of $CaCl_2$. Strength of mortar samples without $CaCl_2$, after 29 days without moistening, was found to be 9.5 kg/cm^2; the same with $CaCl_2$ added, 18.6 kg/cm^2.

A.P.T.

Card 2/2

MINKEVICH, B., inzh.

Gypsum retarders. Stroitel' no.10:26 O '58. (MIRA 11:11)
(Gypsum)

MINKEVICH, B.I.

Effect of vibration and different filling materials on the quality of plastic concrete made with monomeric furfurole-acetone resin. Vop. gidr. no.3:118-123 '61. (MIRA 15:4)
(Concrete)

MINKEVICH, B.I. (g.Tashkent); FEDYAY, V.N. (g.Tashkent)

Placing plastic concrete made with the "FA" monomer to protect hydraulic structures from destruction. Gidr.i mel. 13 no.7:35-39 '61. (MIRA 14:7)
(Concrete construction) (Uzebekistan--Dams)

MINKEVICH, B.I.; MUKHAMEDAMINOV, R.A.

Polyacrylamide retards the hardening of structural gypsum. Sbor.nauch. trud.TashNIIS no.5:116-118 '63. (MIRA 18:1)

MINKEVICH, B.M.; DAVIDCHEVSKIY, Yu.I.

Concerning the synthesis of an antenna with a circular aperture. Radiotekh. i elektron 6 no.8:1395-1396 Ag '61. (MIRA 14:7)
(Antennas (Electronics))

MINKEVICH, D.I.

25(1) PHASE I BOOK EXPLOITATION SOV/2098

Moscow. Vyssheye tekhnicheskoye uchilishche imeni N.E. Baumana

Nekotoryye novyye voprosy shtampovki tochnykh detaley; (sbornik statey) (Some New Problems in Stamping Precision Parts; Collection of Articles) Moscow, Oborongiz, 1959. 110 p. (Series: Its: [Trudy] 85) Errata slip inserted. 4,700 copies printed.

Ed.: E.A. Satelya, Honored Worker in Science and Technology, Doctor of Technical Sciences, Professor; Ed. of Publishing House: P.B. Morozova; Tech. Ed.: N.A. Pukhlikova; Managing Ed.: A.S. Zaymovskaya, Engineer.

PURPOSE: This collection of articles is intended for industrial workers in precision stamping and for teachers and students in this or related fields.

COVERAGE: The collection covers problems of stamping thin-walled and low-rigidity sheet products, obtaining rigid "recrystallized" joints, forming square and cylindrical blanks in closed dies, and accuracy and finish in cold extruding. Problems of ultrasonic machining of carbide-alloy materials are also discussed. The articles represent some of the studies carried out in recent years at the Department of Technology of the MVTU (Moscow Higher Technical School) imeni Bauman on methods of stamping precision machine parts. No personalities are mentioned. Some of the articles are followed by references.

TABLE OF CONTENTS:

GUSEV, Vladimir Petrovich; NAZAROV, A.S., inzh.; MINKEVICH, D.I., nauchn. red.; DOLGOVA, A.Sh., red.; MURKINA, V.G., red.

[Manufacture of radio equipment] Proizvodstvo radioapparatury. Moskva, Vysshaia shkola, 1964. 342 p. (MIRA 18:1)

RADIN, Ya.; MINKEVICH, G.

New developments introduced by construction workers in Sverdlovsk. Stroitel' 9 no.2:15,18-19 F '63. (MIRA 16:2)
(Building—Technological innovations)

MINKEVICH, I. A. DECEASED 1964

Medicine - infectious diseases c. '60

CA

26

New kinds of high-quality oil flax. I. Mushkevich. *Maslobolno Zhirovoe Delo* 15, No. 6, 20 (1939). M. reports the development of 3 new kinds of flax, yielding up to 19 quintal/ha. of seeds, contg. 45-26% of high-quality oil. The straw yields 11-12.3% of stripped fiber. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

MINKEVICH, I. A.

Oleaginous plants Izd. 2., perer. i dop. Moskva, Gos. izd-vo selkhoz lit-ry, 1952. 579 p.

MINKEVICH, I.

Agricultural Research

Results and perspectives of the work of scientific research institutions. Sots. sel'.khoz. no. 3, March 1952.

MONTHLY LIST OF RUSSIAN ACCESSIONS, LIBRARY OF CONGRESS, AUGUST 1952. UNCLASSIFIED.

USSR/Geophysics - Irrigation Specialists — Jun 52

"Chronicles: Conference on the Problem Concerning Methods for Irrigation of Agricultural Cultivation," A.I. Shklyarevskiy

"Gidrotekh i Melio" No 6, pp 75-80

During 12 - 14 Mar 52, in Moscow, the Hydrotechnics and Amelioration Sec of the All-Union Acad of Agri Sci imeni Lenin held a plenum, with participation of agricultural and hydrological administrators, directors, and main agronomists of MTS (machine-tractor stations),

(1) 227T46

besides presidents of kolkhozs in irrigated districts of Kuybyshev and Saratov Oblasts. Discussed were problems of utilizing irrigated lands under conditions met beyond the Volga and in other new regions being irrigated. Reports were heard from 22 lecturers: I.A. Minkevich, substitute for Minister of Agri USSR; Prof V.A. Shaumyan, substitute for the director of scientific part of All-Union Sci Res Inst of Hydrotechnics and Amelioration; I.P. Kurylev, head, Kuybyshev Oblast Water Econ; I.A. Isakov, Chief Agronomist, Georgiyev MTS; Dorokhin, Pres, "Krasnaya Znamya" Kolkhoz; Kharitonov, Chief Agronomist, Saratov Oblast Land Admin; Prokhorov, Chief Agronomist, Saratov Oblast MTS; Pakhomov, pres "Komsomolets"

(2) 227T46

Kolkhoz; Yershov, Pres, Kuybyshev Oblast Exec Committee; Ye.G. Petrov, Cand Agr Sci, All-Union Sci Res Inst of Hydrotechnics and Amelioration; Yegorshilov, Engr; N.P. Samsonov, Sr Sci Assoc, All-Union Sci Res Inst of Hydrotechics, and Amelioration; Nesterov, Pres, "Zarya" Kolkhoz; V.G. Kornev; Ostovskiy, Sr Sci Assoc of Ukrainian Exptl Sta; etc.

(3) 227T46

MINKEVICH, I.

MINKEVICH, I.

Agriculture

Outstanding achievements of scientists and innovators in agriculture. Kolkh. proiz. 12 No. 5, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

1. MINKEVICH, I. A.

2. USSR (600)

4. Field Crops

7. Science and the harvest. Nauka i zhizn' 19 no. 11 1952.

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

1. MINKEVICH, I.

2. USSR (600)

4. Agriculture

7. Agricultural propaganda must serve collective farm production. Sots.sel'khoz. 23 no. 12, 1952.

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

MINKEVICH, I.A., doktor sel'skokhozyaystvennykh nauk, professor, laureat Stalinskoy premii.

Highly productive varieties of oilseed crops. Nauka i zhizn' 20 no.7:21-23 Jl '53. (MLRA 6:7)
(Oilseed plants)