"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOKRYLINA, Ye.S.; NOSOVA, Ye.A.

Arterial transfusion of blood, prepared without a stabilizer, in a state of clinical death caused by blood loss. Probl. gemat. i perel. krovi 9 no.4:31-37 Ap '64.

(MIRA 17:11)

1. Laboratoriya eksperimental'noy fiziologii po ozhivleniyu organizma (zav. - prof. V.A. Negovskiy) AMN SSSR, Moskva.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

GURVICH, A.M.; ZOLOTOKRYLINA, Ye.S.; RYABOVA, N.M.

Extinction and restoration of the cardiac activity and functions of the central nervous system in the fibrillation of the heart in dogs. Ekspar. khir. i anest. 9 no.4:94-95 Jl-Ag '64.

(MIRA 18:1)

1. Laboratoriya eksperimental'noy fiziologii po oživleniyu organizma (zav. - prof. V.A. Negovskiy) AMN SSSR, Moskva.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOPUP, A.A.

Experiment in reconstructing rotary kilns. [Cement 29 no.5: 16-17 S-O '63. (MIRA 16:11)

1. Kramatorskiy tsementnyy zavod.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

BYSTROVA, N.; ZOLOTOREV, V.

Piecework wages in construction. Sots. trud 7 no.10:68-72 O '62. (MIRA 15:10)

(Wages—Construction industry)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOREVICH, B., starshiy inzh.

Visit Birsk. Mest.prom.i khud.promys. 3 no.7:34 Jl '62. (MIRA 15:8)

1. Upravleniye bytovogo obsluzhivaniya Bashkirskoy ASSR.
(Bashkiria—Wood carving)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

S/806/62/000/003/012/018

AUTHORS: Novikov, I.I., Glazov, V.M., Zolotorevskiy, V.S.

TITLE: Influence of the rate of cooling during crystallization on the chemical micrononuniformity of alloys.

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledovaniye splavov tsvetnykh metallov. no.3. 1962, 136-142.

TEXT: The paper is based on the experimentally supported postulate that the chemical micrononuniformity of an alloy, resulting from crystallization in nonequilibrium conditions, is a function of the rate of freezing, and, moreover, that a number of peculiarities occur in the development of dendritic liquation in various ranges of freezing rates. It is reasoned that during the growth of a solid-solution crystallite enriched with one of the components, the melt layer adjacent to the phase interface becomes enriched with the other component. The existence of the concentration gradient leads to the process of equalizing diffusion in the liquid phase (EDL). Meanwhile a new layer of solid solution, having a composition that is at variance with the composition of the liquid phase, forms in immediate contact with the crystallite. This process may be tentatively named separating diffusion (SD). The SD produces an equilibrium difference of concentrations that is determined by the horizontal distance between liquidus and solidus on the phase diagram. Lastly, the presence of a concentration gradient within the crystallites gives rise to an equalizing diffusion within the solid phase (EDS). Obviously, these 3 elementary diffusion

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processes govern the character and degree of the chemical micrononuniformity in the course of nonequilibrium crystallization. Since dendritic liquation leads to the formation of a concentration gradient within the primary crystallites of the solid solution and also of a second structural component (e.g., the eutectic), two indices of chemical micrononuniformity of liquational origin must of necessity be distinguished, namely, a total liquational micrononuniformity due to the chemical-component-concentration difference between a second structural component and that existing in the crystallization center of the primary crystallites, and an intracrystalline liquation micrononuniformity between the component concentrations at the periphery and at the center of the primary crystallites. The effect of the freezing rate on these two indices is qualitatively analyzed, showing how an increasing rate of freezing does not permit the EDS to catch up with the difference in composition between the surficial region and the center of the dendritic grain. Beyond a certain freezing rate the composition of the center of the dendritic grain is invariably determined by the point on the equilibrium solidus and does not change with any further increase in freezing rate, until, at a still higher freezing rate, the SD in the liquid melt begins to be depressed, so that the composition of the center of the dendritic lattice begins to change back from the solidus value toward the initial melt concentration. Lastly, at a certain freezing rate, the SD in the liquid phase is wholly inhibited, and nondiffusional crystallization occurs, whereupon the composition of the uniform solid solution throughout the crystallite equals the concentration of the

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

RASTREPIN, A.B.; ZOLOTOTRUBOV, I.M.; BUGAY, Yu.P.

Mass-spectrometric study of the energy distribution of ions in a plasma. Izv. AN SSSR. Ser. fiz. 27 no.8:1113-1117 Ag '63. (MIRA 16:10)

1. Fiziko-tekhnicheskiy institut AN UkrSSR.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOTRUBOV, I.M.; RYZHOV, N.M., SKOBLIK, I.P.; TOLOK, V.T.

Behavior of plasma in a varying magnetic field. Zhur. tekh. fiz. 30 no.7:769-773 Jl '60. (MIRA 13:8)

1. Fiziko-tekhnicheskiy institut AN USSR, Khar'kov.
(Plasma (Ionized gases)) (Magnetic fields)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOVITSKIY, Ye.N.

Methodological consultation; reviewing arithmetic in the algebra course in the 6th and 7th grades. Mat.v shkole no.4:55-56 Jl-Ag '59. (MIRA 12:11)

(Arithmetic--Study and teaching)
(Algebra--Study and teaching)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 11, p 306 (USSR) SOV/137-57-11-22783

AUTHORS: Grinberg, A. V., Zolotokrylina, O. G.

TITLE: Changes in the X-ray Picture of the Lungs Resulting From the Inhalation of Metallic Dust During Electric Welding (Rentgenologicheskiye izmeneniya v legkikh ot vdykhaniya metallicheskoy pyli pri svarochnykh rabotakh)

PERIODICAL: Tr. Yubileyn. nauchn. sessii, posvyashch. 30-letney deyat-sti Gos n.-i. in-ta gigiyeny truda i profzabolevaniy. Leningrad, 1957, pp 288-295

ABSTRACT: The investigation of changes occurring in the lungs upon the inhalation of Fe_2O_3 dust showed that siderosis of the lungs of electric welders is distinguished by a benign course; upon the mass examination of welders who had worked under the most unfavorable conditions, siderosis of the lungs was discovered among one-third of the workers. The X-ray picture of siderosis distinguishes it from other forms of pneumoconiosis and is to a large extent attributed to the opaqueness of electric-welding dust to X-rays.

Card 1/1

Ye. L.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 12, p 206 (USSR) SOV/137-58-12-25546

AUTHORS: Grinberg, A. V.; Zolotokrylina, O. G.

TITLE: Observation of Changes in the Lungs Due to Inhalation of Electric-welding Dust (Nablyudeniya nad izmeneniyami v legkikh ot vdykhaniya elektrosvarochnoy pyli)

PERIODICAL: Tr. nauchn. sessii Leningr. n.-i. in-ta gigiyeny truda i prof-zabolevaniy, posvyashch. itogam raboty za 1955 g. Leningrad, 1958, pp 117-122

ABSTRACT: Clinical X-ray investigation of the effect of Fe_2O_3 and electric-welding dust (ED) of chalk-coated electrodes on the organism of ~400 welders (W) of the ship-building industry, together with experimental investigations with animals, revealed demonstrative changes in the lungs characterized by mottled appearance of lung area caused by numerous small rounded spot formations covering both lung areas throughout. The X-ray picture of the changes which were disclosed in the lungs correlates with the picture of nodule-reticular pneumoconiosis (P). Similar pathological manifestations were found in 40% of W examined. Siderosis of the lungs among W is often diagnosed as early as after 3-5

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

SOV/137-58-12-25546

Observation of Changes in the Lungs Due to Inhalation of Electric-welding Dust

years of service. Histological investigation of the lungs of animals during 14-17 months revealed a growth of the connective tissue. The conclusion is drawn that the pattern of P of W as revealed by the X-ray picture is caused also by fibrosis of the lungs which developed after penetration of ED, and not by ED alone.

Yu. S.

Card 2/2

USCOMM-DC-60,666

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

GRINBERG, A.V.; ZOLOTOKRYLINA, O.G.

Observation of siderosis in electric welders. Vest.rent. i rad. 31 no.5:40-45 S-O '56. (MIRA 10:1)

1. Iz rentgenologicheskogo otdeleniya (zav. - prof. A.V.Grinberg) klinicheskogo otdela (zav. - prof. M.A.Kovnatskiy) Nauchno-issledovatel'skogo instituta gigiyeny truda i professional'nykh zabolevaniy (dir. - kandidat meditsinskikh nauk Z.E.Grigor'yev)

(SIDEROSIS
in welders)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

SHABANOV, A. N., prof.; BEL'SKAYA, T. P.; ZOLOTOKRYLINA, Ye. S.

Organization and results of work of the center for treatment of shock and terminal states in the S. P. Botkin Hospital. Ortop., travm. i protez. no.12:3-9 '61. (MIRA 15:2)

1. Iz TSentra po lecheniyu shoka i terminal'nykh sostoyaniy pri bol'nitse im. Botkina (glavnyy vrach - prof. A. N. Shabanov, nauchnyy konsul'tant - prof. D. K. Yazykov) i laboratorii eksperimental'noy fiziologii po ozhivleniyu organizma (zav. - prof. V. A. Negovskiy) AMN SSSR.

(SHOCK)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOKRYLINA, Ye.S.

Comparative effedt of treating hemorrhage by intravenous and intra-arterial blood transfusions. [with summary in English] Eksp. khir. 2 no.1:20-28 Ja-F '57 (MLRA 10:4)

1. Iz laboratorii eksperimental'noy fiziologii po oshivleniyu organizma (zav.-prof. V.A. Negovskiy) AMN SSSR.
(HEMORRHAGE, exper.
eff. of intravenous & intra-arterial blood transfusions, comparison in animals) (Rus)
(BLOOD TRANSFUSION, in various dis.
exper. hemorrh., comparison of intravenous & intra-arterial transfusion in animals) (Rus)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOKRYLINA, Ye.S.

ZOLOTOKRYLINA, Ye.S. (Moskva)

Effect of the duration of anemia on the effectiveness of intravenous and intra-arterial blood transfusions [with summary in English]. Pat.fiziol. i eksp.terap. 1 no.5:68-73 S-O '57. (MIRA 10:12)

1. Iz laboratorii eksperimental'noy fiziologii po ozhivleniyu organizma (zav. - prof. V.A. Negovskiy) AMN SSSR.
(ANEMIA, experimental,
eff. of duration on responses to intra-arterial & intravenous blood transfusion (Rus))
(BLOOD TRANSFUSION, experimental,
intra-arterial & intravenous, eff. of duration of anemia on response (Rus))

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOKRYLINA, Ye. S.

"A Comparison of the Effectiveness of Intravenous and Intra-Arterial Transfusion of Blood During Hemmorrhage," by Ye. S. Zolotokrylina, Laboratory of Experimental Physiology for Revival of Organisms (head, Prof V. A. Negovskiy), Academy of Medical Sciences USSR, Eksperimental'naya Khirurgiya, No 1, Jan/Feb 57, pp 20-28

Thirty-four experiments were run on dogs subjected to the effects of severe hemorrhage with the aim of comparing the effectiveness of intravenous and intra-arterial transfusions.

Results proved that rapid intravenous transfusions, as well as intravenous transfusions under pressure (120-140 mm Hg) administered towards the end of the agonal period were ineffective, in most cases, and caused cardiac dilatation and fibrillation. Rapid intra-arterial transfusions, however, proved effective in all cases. Intra-arterial transfusions following intravenous transfusions proved ineffective.

In all cases where cardiac function was not re-established, venous pressure rose after administering intravenous transfusions. (U)

Sum '57

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

CHESNOKOVA, G.D.; IVANOVA, A.T.; ZOLOTOKRYLINA, Ye.S.; RYABOVA, N.M.; LEBEDEVA, L.V.

Resuscitation in surgery. Sovet. med. 17 no. 1:18-20 Jan 1953. (CLML 24:1)

1. Of Moscow Municipal Scientific-Research Institute of First Aid imeni Sklifosovskiy (Director — B. A. Petrov) and of the Laboratory of Experimental Physiology for Revival of the Organism (Head -- Prof. V. A. Negovskiy) of the Academy of Medical Sciences, USSR.

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

SMIRENSKAYA, Ye.M.; KISELEVA, K.S.; ZOLOTOKRYLINA, Ye.S.

Significance of forced arterial blood transfusion in compound therapy for severe forms of shock. Ortop., travm. i protez. no.6:10-16 N-D '55. (MLRA 9:12)

1. Iz laboratorii eksperimental'noy fiziologii po ozhivleniyu organizma (zav. - prof. V.A.Negovskiy) AMN SSSR.
(SHOCK, ther.
blood transfusion, forced)
(BLOOD TRANSFUSION,
forced in ther. of shock)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Zozoto Kyrina E. S.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

S/123/62/000/018/012/012
A006/A101

AUTHORS: Novikov, I. I., Korol'kov, G. A., Zolotorevskiy, V. S.

TITLE: The use of low-frequency vibration during crystallization to improve the structure and properties of non-ferrous alloy ingots and castings

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 18, 1962, 4 - 5 abstract 18G20 ("Sb. nauchn. tr. In-t tsvetn. met. im. M. I. Kalinina", 1960, 33, 237 - 262)

TEXT: By the present, a great number of studies has been performed on the use of low-frequency vibration for: macro-grain refining; changing the micro- and domain-structure of alloys; increasing the density of castings; degassing and refining from mechanical inclusions; improving the filling capacity of molds and raising mechanical properties. Low-frequency vibration has as yet not been used in practice for casting non-ferrous metals. The authors present results from investigations carried out at the department of metal study of the Institut tsvetnykh metallov imeni Kalinina (Institute of Non-Ferrous Metals imeni Kalinin) in 1956 - 1959 on the use of up to 150-cycle frequency vibrations in casting

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ingots and shaped products from aluminum, magnesium and copper alloys. The effect of vibration of the melt upon refining of ingot grains was determined on a laboratory unit with oriented crystallization. The unit includes a mold, 90 mm in diameter, 300 mm height, and with 1 mm thick walls. The mold was placed in a water container whose water level rose at a speed of 17 cm/min. A vibrating disk-shaped tip rose continuously at a minimum distance from the crystallization front. Aluminum ingot grains were considerably refined at 120 cycles frequency and 0.18 mm amplitude. Grain refining was not observed when the tip was introduced only to the upper portion of the melt. A description is presented of an industrial unit for a machine intended for the semi-continuous casting of MA8 alloy ingots of 540 x 160 mm section. A disk- or plate-shaped steel tip, perpendicular to the ingot axis, is placed on the pneumatic vibrator shaft, 10 - 20 mm from the crystallization front. At 80 cycles frequency and 0.4 mm amplitude, sharp grain refining in the ingot is observed. Lunar-shaped bent tips did not yield grain refining. The mechanism of grain refining under the effect of vibrations was studied by means of staged photography and microfilming in light, passing through a drop of a NH_4Cl solution, on a special unit. The unit consists of a table with glass and an electromagnetic vibrator of 50 cycles frequency and 0.05 - 0.1 mm amplitude,

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a binocular magnifier, a cinematographic and a photographic camera, an illuminator, etc. It was established that vibration accelerates the solidifying process, as confirmed by cooling curves of pure tin; this causes the appearance of a basic crystal mass in the solution volume. When vibration was interrupted, new equiaxial crystals continued to appear in the solution volume. The crushing of brittle NH_4Cl salt dendrites, suspended in the liquid, was relatively rare. The hypothesis of dendrite break under the effect of low-frequency vibrations was not confirmed. Sharp grain refining during vibration is explained by the development of favorable conditions for the nucleation and evolution of crystallization centers in the melt volume due to the breakdown of the "heat" and "concentration barriers", and as a result of crystals tearing off the mold wall and being carried into the liquid volume. Vibration of alloy В95 (V95) and АЛ 7 (AL7) reduced the proneness of the alloy to the formation of crystallization cracks to a degree increasing with higher vibration frequency. Macro and microanalyses revealed healed-up cracks. БрКНИ -3 (BrKNI-3) bronze, which is highly sensitive to hot crack formation, was subjected to vibration treatment at 30 - 110 cycle frequency and 0.3 mm amplitude. Ring-shaped specimens were chill-cast with 60 mm external and 30 mm internal diameter, and 40 mm height. At 120 - 150 cycles

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

frequency the development of hot cracks is fully eliminated. An Al+4% Cu alloy ring-shaped specimen was used to check the relationship between grain size and linear shrinkage. It was established that in the case of coarse grains the magnitude of linear shrinkage during the crystallization period is always higher than in fine grains, at low ductility of the alloy. Consequently, the proneness to hot brittleness is considerably reduced by grain refining. The effect of mold vibration upon the mechanical properties of castings was determined in the production of 10 kg MJ5 (ML5) castings in 150 kg chill molds. Pneumatic vibrators were used. The mold vibration frequency was 40 - 50 cycles at 0.1 - 0.2 mm amplitude. The ultimate strength and relative elongation of the ML5 alloy in quenched state was increased. There are 21 figures, 2 tables and 29 references.

M. Anuchina

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

L 14257-63

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

L 11257-63

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

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ature of nonequi. [illegible] solidus. Increased temperature of reheating considerably lowered the relative elongation in the temperature interval of embrittlement. This is because of the development of continuous columnar structure. The formation of

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

KOGAN, L.B.; NOVIKOV, I.I.; ZOLOTOREVSKIY, V.S.; GORBUL'SKIY, G.F.; PORTNOY, V.K.

Shrinkage cracks during iron casting in metal molds. Lit.proizv. no.4: 32-34 Ap '63. (MIRA 16:4)
(Die casting) (Thermal stresses)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOREVSKIY, V.S. (Moskva); NOVIKOV, I.I. (Moskva)

Effect of the rate of cooling during crystallization on the amount of eutectics in aluminum alloys. Izv. AN SSSR, Otd. tekh. nauk. Met. i topl. no.1:39-43 Ja-F '61. (MIRA 14:2)
(Aluminum alloys—Metallography) (Crystallization)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

NOVIKOV, I.I.; KOROL'KOV, G.A.; ZOLOTOREVSKIY, V.S.

Mechanism of grain refining by low frequency vibration during crystallization. Izv.vys.ucheb.zav.; chern.met. no.5: 130-134 '60. (MIRA 13:6)

1. Krasnoyarskiy institut tsvetnykh metallov.
(Foundry research) (Crystallization--Testing)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

UL'YANOVA, A.D.; ZOLOTOVERKHIY, I.D., otv.red.; SHTOL'SHTEYN, Ya.M., red.; SHVEDOV, L.M., tekhred.

[What to read on the uses of natural gas in industry, automobile transportation, municipal economy, home appliances, and on pipeline operations] Chto chitat' ob ispol'zovanii prirodnogo gaza v promyshlennosti, avtotransporte, kommunal'nom khoziaistve, v bytu i ob ekspluatatsii gazoprovodov. Kiev, 1948. 20 p. (MIRA 13:5)

1. Akademiya nauk USSR, Kiyev. Biblioteka. 2. Glavnyy bibliograf Biblioteki Akademii nauk USSR (for Ul'yanova). 3. Glavnyy inzhener tresta "Kiyevgaz" (for Shtol'shteyn).
(Bibliography--Gas, Natural)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

NOVIKOV, I.I.; KOROL'KOV, G.A.; ZOLOTOREVSKIY, V.S.

Use of low-frequency vibration during crystallization in order to improve the structure and properties of nonferrous alloy ingots and castings. Sbor. nauch. trud. GINTSVETMET no.33: 237-262 '60. (MIRA 15:3)

(Nonferrous ingots) (Crystallization)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

NOVIKOV, I.I.; GLAZOV, V.M.; ZOLOTOREVSKIY, V.S.

Effect of the rate of cooling during crystallization on the chemical microheterogeneity of alloys. Issl. splav. tsvet. met. no.3:136-142 '62. (MIRA 15:8)
(Nonferrous alloys) (Crystallization)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

S/137/62/000/005/050/150
A006/A101

AUTHORS: Novikov, I. I., Korol'kov, G. A., Zolotorevskiy, V. S.

TITLE: The use of low-frequency vibration during the crystallization period to improve the structure and properties of non-ferrous alloy ingots and castings

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 31, abstract 5G199 ("Sb. nauchn. tr. In-t tsevtn. met. im. M. I. Kalinina", 1960, v. 33, 237 - 262)

TEXT: Vibration of the melt near the crystallization fron refines macrograins of an ingot. Low-frequency vibration of the melt in the crater ("lunka") of a continuous-cast ingot can be recommended to refine the microstructure. Grain refining in low-frequency vibration is determined by the facilitated nucleation of crystals in the liquid volume and by the tearing-off of crystallites from the mold wall and their transport into the solution volume. With a higher vibration frequency during the crystallization period, the susceptibility of the alloy to hot brittleness decreases. Low-frequency vibration of chill castings noticeably increases the ultimate strength and δ (elongation) of alloy

Card 1/2

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S/137/62/000/005/050/150
A006/A101

The use of low-frequency...

МЛ 15 (ML15) in quenched state. Results of experiments on the use of vibration with up to 150 cps frequency in the casting of Al, Mg and Cu alloy ingots are presented. There are 29 references.

G. Svodtseva

[Abstracter's note: Complete translation]

Card 2/2

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

NOVIKOV, I.I.; ZOLOTOREVSKIY, V.S.

Investigating regularities of dendritic segregation in connection with the hot brittleness of nonferrous alloys. Lit. proizv. no.4: 13-18 Ap '62. (MIRA 15:4)
(Nonferrous metals--Founding) (Nonferrous alloys--Metallography)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

S/180/61/000/001/003/015
E071/E433

AUTHORS: Zolotorevskiy, V.S. and Novikov, I.I. (Moscow)

TITLE: On the Influence of the Cooling Velocity During Crystallization on the Amount of an Eutectic Component in Aluminium Alloys

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.1, pp.39-43

TEXT: The amount of eutectic component has a strong influence on many casting and mechanical properties of alloys and although it is known that the velocity of cooling during crystallization is the main factor determining the deviation of the structure from the equilibrium state, there are no systematic data on the subject. In order to establish the quantitative relationship between the non-equilibrium excess of a eutectic component and the cooling velocity, the authors carried out some experiments with aluminium alloys containing 2 and 5% of copper and 6% of magnesium. The purity of the metals used for the preparation of alloys were: aluminium 99.99%, copper 99.95%, magnesium 99.92%. The experimental procedure was to cool specimens 15 mm in diameter and 20 mm in height either in graphite-chamotte crucibles of various

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wall thickness together with the furnace, or in air or cold water. The hot junction of a bare chromel-alumel thermocouple was immersed into the melt approximately in the centre of the specimen. The cooling curves were recorded. The amount of the eutectic component was determined on microphotographs by the planimetric method. The preparation of sections of specimens is described in some detail. Curves of the dependence of the intracrystalline segregation on cooling velocity are shown in Fig.1. An example of the dependence of the microhardness of the centre and periphery of the dendritic cell on the cooling velocity (for an alloy containing 5% of copper) is shown in Fig.2, from which it can be seen that the composition of the centre of the cell remains practically constant within a wide range of cooling velocities. Some small increase of the microhardness of the centre of the cell in the range of very low velocities (up to a few degrees per min) is explained by the fact that, partially, equalizing diffusion between the solid solution and the centre of the cell takes place, due to which the centre is somewhat enriched in copper. The character of the dependence of the degree of intracrystalline segregation on the cooling velocity is determined almost entirely by the character of the dependence of

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of the composition of the periphery of the dendritic cell on the cooling velocity. In the equilibrium state none of the three alloys contained the eutectic component but already at very low cooling velocities (of the order of 2°C/min) there appears the second phase of a eutectic origin. With increasing cooling velocity, the amount of the eutectic component increases, attains maximum and then decreases. The decrease is very slow within a wide range of cooling velocities. The maximum amount of the eutectic component, as well as the maximum of intracrystalline segregation, appears at low cooling velocities (10 to 50°C/min). In the range of cooling velocities observed under industrial conditions during casting, the non-equilibrium excess of the eutectic component decreases somewhat or remains unchanged. Therefore, in a wide range of cooling velocities (from tens to hundreds of degrees per min) changes of technological and mechanical properties of an aluminium alloy of a given composition should not be related to changes in the proportion of the eutectic component. Although the amount of the eutectic component is independent on cooling velocity within a wide range of velocities, yet the character of the distribution, shape and size of its inclusions

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change sharply due to the diminution of dendritic cells of primary crystals. Critical cooling velocities, corresponding to a maximum of intracrystalline segregation and the amount of eutectic component may not coincide. The non-equilibrium excess of the eutectic compound is directly related to the difference in its concentration on the periphery and centre of the dendritic cell (the degree of intracrystalline segregation was measured in this work) and not to the total content of the alloying element in primary crystals. If the latter decrease with increasing cooling velocity, then simultaneously the amount of eutectic in the alloy increases. At a very high cooling velocity (a few thousand degrees per minute) the second phase is so dispersed that it cannot be detected under an optical microscope. An example of the microstructure of a rapidly cooled (by pouring on a cold copper plate) alloy, containing 2% of copper is shown in Fig.3 (dendritic cells are absent and only polyhedra with well-developed faces can be seen). It is pointed out that A.B.Michael and M.B.Bever ((J.Metals, 1954, V.6, No.1, sec.1, Ref.1) who obtained a continuous increase of the eutectic component with increasing cooling velocity, missed the cooling range within which the maximum appears and did

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not investigate very high cooling rates at which the eutectic component practically disappears. Acknowledgments are expressed to V.M.Glazov for his comments on the paper. There are 3 figures and 12 references: 9 Soviet and 3 non-Soviet.

SUBMITTED: July 8, 1960

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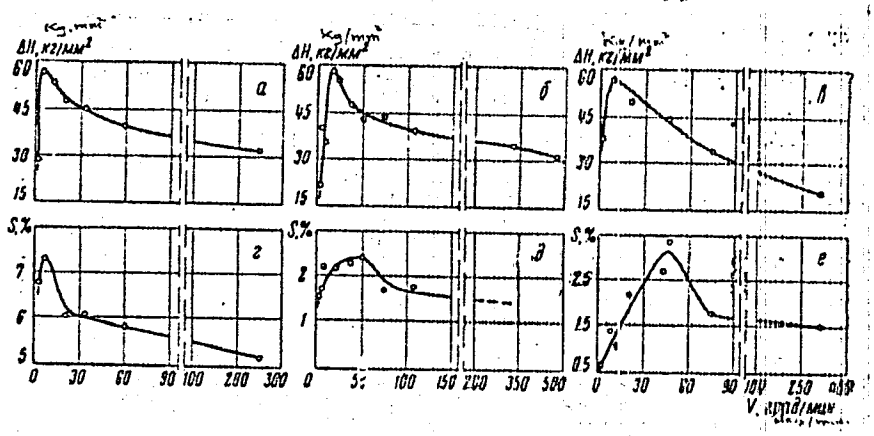

Fig.1. Dependence of the degree of dendritic segregation, ΔH, kg/mm^2 (graphs a, б, в - top graphs) and quantity of the eutectic S, % (graphs г, д, e - bottom graphs) on the cooling speed V, °C/min, in alloys: Al + 5% (graphs a, г) Al + 2% Cu (graphs б, д) and Al + 6% Mg (graphs в, e).

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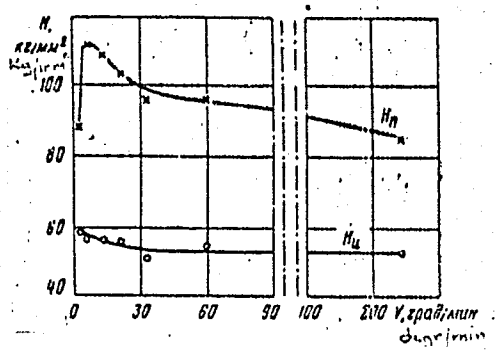

Fig.2. Dependence of the microhardness of the centre $H_{ц}$ and of the periphery $H_{п}$ of the dendritic cell on the cooling speed in an alloy of Al + 5% Cu, H, kg/mm^2 versus V, °/min.

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Fig.3. Microstructure of an alloy of Al + 2% Cu poured onto a cold copper plate (x250).

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ZOLOTOREVSKIY, V.S.; NOVIKOV, I.I.

Effect of superheating the melt on the concentration microheterogeneity in aluminum alloys. Fiz. met. i metalloved. 18 no.6:862-868 D '64. (MIRA 18:3)

1. Moskovskiy institut stali i splavov.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

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S/128/62/000/004/004/010
A004/A127

18.1410

AUTHORS: Novikov, I.I.; Zolotorevskiy, V.S.

TITLE: Investigating the regularities of dendritic liquation in connection with the hot shortness of nonferrous alloys

PERIODICAL: Liteynoye proizvodstvo, no. 4, 1962, 13 - 18

TEXT: The authors investigate in the first place the effect of the cooling rate on the development of intracrystalline liquation and point out that the following three processes affect the development of dendritic liquation: distributing diffusion, equalizing of the composition in the liquid solution and equalizing diffusion in the solid solution. They describe in detail the effects of these processes and conclude from tests carried out with binary Al-alloys containing 2 - 5% Cu, 6% Mg and 2 and 30% Zn that over the whole range of cooling rates observed during casting, the composition of crystallites at temperatures at the beginning of crystallization is determined by the solidus equilibrium point. Tests have revealed that over a wide range of cooling rates, which can be practically realized, the composition of the crystallite center remains invariable, while the presence of the eutectic constituent indicates the constancy

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of the composition of the dendritic cell boundary which is determined by the point of maximum solubility. The authors then investigate the shift of the concentration boundary of the emergence of the second phase from the melt at various cooling rates and point out that the binary alloys having a maximum hot shortness do not contain 3 - 5%, but only hundredths or tenths parts of one percent of the eutectic constituent, which forms as a result of dendritic liquation. The third factor investigated by the authors is the effect of the cooling rate on the quantity of nonequilibrium eutectic. They present a number of graphs showing that, with an increase in the cooling rate, the quantity of excess phases forming from the melt grows, reaches its maximum, decreases again and then remains practically stable over a wide range of cooling rates. The quantity of nonequilibrium eutectic depends on the total content of alloying elements in primary crystals. The authors conclude that changes in hot shortness and mechanical properties of nonferrous metals, particularly of the Al-alloys under investigation, during increased cooling rates are not connected with an increase or decrease in the eutectic quantity but with changes in the nature of distribution, shape and dimensions of inclusions of low-melting constituents. There are 7 figures. The references to the four most recent English-language publications read as follows: Elbaum, C., Progress in metal physics, 8, 1959; Researches into the welding of aluminium

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Investigating the regularities..... S/128/62/000/004/004/010
A004/A127

and its alloys, London, 1955; Michael A.B., Bever M.B., J. Met., v. 6, No. 1, sec. 1, 1954; Jaffe D., Bever M.B., J. Met. v. 8, No.8, sec. 2, 1956.

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ZOLOTOREVSKIY, Yu. S.

;(1) 18(6) I SE I BOOK EXPLOITATION SOV/3217

Baykov, Dmitriy Ivanovich, Yuliy Semenovich Zolotorevskiy, Vladimir Leonidovich Russo, and Tamara Konstantinovna Ryazhskaya

Svarivayushchiyesya alyuminiyevyye splavy; svoystva i primeneniye (Weldable Aluminum Alloys; Properties and Application) Leningrad, Sudpromgiz, 1959. 234 p. 4,300 copies printed.

Ed.: Yu. S. Kazarov; Tech. Ed.: L. I. Levochkina.

PURPOSE: This book is intended for production engineers and designers working with corrosion-resistant weldable aluminum alloys.

COVERAGE: The authors describe properties of corrosion-resistant weldable aluminum-magnesium alloys, their production, machining, welding and riveting. They give data on corrosion resistance and on the effect of the rate of loading, temperature, and notching on the properties of the alloys. The authors discuss special cases and some characteristic features of designing aluminum alloy constructions, giving examples of the application of aluminum alloys in shipbuilding and railroad rolling stock. The following personalities are mentioned as having contributed to the compilation of this book:

Card 1/5

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

V. G. Azbukin, Yu. A. Belyakov, K. S. Bolotova, V. G. Danchenko, Z. I. Ivanova, I. V. Korchazhinskaya, I. A. Nezhnikovskiy, A. I. Pas', A. N. Polubotko, I. P. Prosyankin, V. S. Rudometov, Yu. S. Ryabushkin, Z. G. Sokolova, Ye. I. Tarakanchikova, and M. M. Chikhanova. The authors also express their thanks to K. S. Bolotova, P. N. Yefimov, Ye. I. Tarakanchikova, I. A. Travnikova and M. M. Chikhanova for their help in processing the material. There are 65 references, 42 Soviet, 10 English, 10 German, and 3 French.

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BAYKOV, Dmitriy Ivanovich; ZOLOTOREVSKIY, Yuliy Semenovich; RUSSO, Vladimir Leonidovich; RYAZINSKAYA, Tamara Konstantinovna; BABICHEV, B.I., kand.tekhn.nauk, nauchnyy red.; KAZAROV, Yu.S., red.; LEVOCHKINA, L.I., tekhn.red.

[Weldable aluminum alloys; properties and use] Svarivaiushchiesia aliuminievye splavy; svoistva i primenenie. Leningrad, Gos.soiuznoe izd-vo sudostroit.promyshl., 1959. 234 p. (MIRA 12:10)

(Aluminum alloys)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

EXCERPTA MEDICA Sec 9 Vol 13/3 Surgery Mar 59

1534. (455) COMPARATIVE EFFICIENCY OF INTRAVENOUS AND INTRA-ARTERIAL BLOOD TRANSFUSION IN BLOOD LOSS (Russian text) - Zolotokrylina E. S. - EKSPER. KHIR. 1957, 1 (20-27)

Experimental animals in which the blood loss did not exceed 24-30% survived, and no marked haemodynamic disturbances were observed. The loss of 45-50% of the total blood volume was followed by marked haemodynamic disturbances. I. v. blood transfusion in these animals rapidly restored the arterial pressure and they survived. When the blood lost within 1-1.5 hr. amounted to 67-76% of the total volume, the animals collapsed. I. v. blood transfusion did not save these animals. Intra-arterial blood transfusion performed after the unsuccessful i. v. transfusion likewise did not help. Only when the intra-arterial transfusion was performed immediately, and without any previous i. v. transfusion, was cardiac action resumed. Based on these experiments it is recommended therefore to perform an intra-arterial instead of an i. v. blood transfusion in patients with severe blood loss.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

1538. (459) A CLINICAL COMPARATIVE EVALUATION OF INTRAARTERIAL AND INTRAVENOUS BLOOD TRANSFUSION (Russian text) - Zolotokrylina E. S. - VESTN. KHIR. 1958, 81/8 (31-35) Tables 3

Clinical experiences with intraarterial blood transfusion in 45 cases of severe shock, agony and clinical death are described. I. v. injections failed to give a permanent improvement; intraarterial administration was followed by the recovery of 25, temporary improvement of 13 patients and no response whatever in 7 cases.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOKRYLINA, Ye.S.; NOSOVA, Ye.A.

Effect of blood stabilization with citric acid preparations on the effectiveness of intra-arterial transfusions in treating terminal states caused by blood loss. Probl. gemat. i perel. krovi 8 no.5:41-47 My'63. (MIRA 16:8)

1. Iz laboratorii eksperimental'noy fiziologii po omhlivleniyu organizmov (zav. - prof. V.A. Negovskiy) AMN SSSR.
(BLOOD--TRANSFUSION) (DEATH, APPARENT)
(CITRIC ACID)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOKRYLINA, Ye. S., Cand Med Sci (diss) -- "The comparative effectiveness of intravenous and intraarterial blood transfusion at various stages of the development of terminal states caused by blood loss". Moscow, 1959. 20 pp (Acad Med Sci USSR), 200 copies (KL, No 9, 1960, 128)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

SMIRENSKAYA, Ye.M.,; ZOLOTOKRYLINA, Ye.S.(Moskva)

Modification of gas exchange in dogs during the resuscitation period following clinical death. Arkh. pat. 18 no.1:99-100 '56 (MLRA 9:6)

1. Iz laboratorii eksperimental'noy fiziologii po ozhivleniyu organizma (zav.-prof. V.A. Negovskiy) AMN SSSR.
(RESUSCITATION, metabolism in.
oxygen consumption during restoration of vital funct. after clin. death in dogs (Rus))
(METABOLISM,
oxygen consumption during restoration of vital funct. after clin. death in dogs (Rus))

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1. CHESNOKOVA, G. D.; IVANOVA, A. T.; ZOLOTOKRYLINA, Ye. S.; RYABOVA, N. M.; LEBEDEVA, L. V.

2. USSR (600)

4. Resuscitation

7. Resuscitation in surgery, Sov. med. 17, No. 1, 1953.

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

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NOVIKOV, I.I.; ZOLOTOREVSKIY, V.S.; LISOVSKAYA, T.D.

Temperature range for the formation and propagation of crystallization cracks in aluminum alloys and the criteria of hot shortness. Issl. splav. tsvet. met. no.4:130-140 '63. (MIRA 16:8)

(Aluminum alloys—Brittleness)
(Thermal stresses)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

1. BELUGA, S. P., ZOLOTOROG, A. F., GLINITSKAYA, T. G.

2. USSR (600)

4. Kilns

7. Operating gas chamber furnaces with three fires. Stek. i ker. 10 no. 3, 1953

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

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7

Volumetric determination of chromium, manganese and vanadium with diphenylamine indicator. Z. S. Mukhina and N. V. Zolotoreva. *Zavodskaya Lab.* 8, 881-4(1934). —With the aid of diphenylamine as indicator, the persulfate method for detg. Cr, Mn and V can be modified so that direct titration can be made with $FeSO_4$ and $K_2Cr_2O_7$ can replace $KMnO_4$. Full details are given for carrying out the analysis. Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Zolotorog, A. F., and Agafonov, V. K. MANUFACTURE OF GROGLESS REFRACTORY PRODUCTS. Ogneupory, 8 [2] 122-25 (1940) —Experiments show that the production of grogless refractories from plastic refractory clay without adding leaning agents is possible by the semitry method. Such products possess a regular geometric shape, have a dense and homogeneous structure, and are as durable as similar grog products.

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ZOLOTCHOG, A. F.

23287. Proizvodstvo keramicheskikh plitok dya polov 12 glin druzhkovskogo Mestorozhdeniya. Steklo i keramika, 1949, No. 6, c.16-20

SO: LETOPIS' NO. 31, 1949

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

BELUGA, S. M.; ZOLOTOROG, A. F.

Tiles

Production of ornamental floor tiles. Stek. i ker. 9 No. 6 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Floor plates from Druzhkovsk clay deposits. S. M. BELUGA AND A. F. ZOLOTOROV. Steklo i Keram., 6/7 16-20 (1949).—The increasing demands of the metallurgical industry for refractory products made from high-grade Chasov-Yar clay made it necessary to test "regular" (and "select") grades of Druzhkovsk clays of the following characteristics as substitutes in the manufacture of floor plates: SiO_2 56.85 (46.8), Al_2O_3 30.6 (37.48), Fe_2O_3 1.22 (1.32), CaO 0.7 (1.0), MgO 0.3 (0.3), ignition loss 7.9% (11.55%); sintering temperature 1280° (1200°); and refractoriness 1730° (1710°). In semicommercial experiments, well-sintered colored plates of low mechanical strength but with a water absorption of 4% were prepared from the select grade without the use of fluxes, provided the clay was first given a plastic working. Regular grade clay, when treated by the plastic method, was satisfactory for colored plates provided 4.5 to 5% feldspar was added. In commercial experiments, the plates were formed in semiautomatic presses (2-stage pressure of 50 and 250 atm.). Rejects from the presses amounted to 10 to 12% for regular grade and 7 to 8% for select grade due to low mechanical strength, stratification, and insufficient demarcation and strength of the corners. The plates were fired in gas kilns at 1200°, in a strongly oxidizing atmosphere. They had a tendency toward surface deformation. The addition of feldspar may be raised to 10%, depending on the firing temperature. B.E.K.

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOROG, A.F.

Ceramics (3)

Fuel Abst.
Vol. XV, No. 2
Feb. 1954
Industrial Furnaces,
Kilns, etc.:
Combustion.

1626. GAS-FIRED CHAMBER KILNS WITH THREE FIRING ZONES. Beluga, S.M., Zolotorog, A.F. and Gnilitskaya, T.G. (Steklo Keram. (Glass & Ceramics, Moscow), Mar. 1953, 17, 18).

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Effect of pressure, grain size, and moisture of the mix upon the shrinkage of ceramic plates. S. M. Belenka and A. F. Zolotorog. *Stekla i Keram.* 7 (8) 21-22 (1950).—Experiments were conducted with (1) Nikolaevsk clay of SiO_2 60.96, Al_2O_3 23.70, Fe_2O_3 2.90, CaO 1.00, MgO 0.68, ignition loss 8.76%, refractoriness 1610°C., sintering temperature 1150° to 1200°, and plasticity (Atterberg) class 1, and (2) Nikilorovsk clay of SiO_2 52.98, Al_2O_3 26.9, Fe_2O_3 10.11, CaO 0.82, MgO 0.58, ignition loss 8.0%, refractoriness 1480°C., sintering temperature 1150°, and plasticity (Atterberg) class 1. The firing temperatures were 1140°, 1160°, and 1180°. The greatest effect on the dimensional deviations was caused by pressure. For 100 to 200 atm. the deviations reached 1.8 mm. and at 300 atm. 0.4 to 0.5 mm. Moisture variation between 7 and 8% had no significant effect on changes in linear dimensions; the same was true of grain size (sieves of 25 to 100 openings per cm.²). The higher the pressure, the lower was the water absorption of the fired plates. At pressures of 100 to 150 atm. changing grain size affected the water absorption, but at over 200 atm. this was inconsequential. B.Z.K.

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CA

19

Medach plates from Artemovsk clays. S. M. Belaga and A. P. Zolotorev. *Stekol'naya i Keram. Prom.* 1948, No. 6, 11-12.—Medach plates of satisfactory quality were obtained from Artemovsk clays. Water absorption was 0-1, 2-3, and 4-5% on the top, middle, and bottom, resp. Acid resistance was 97-99% and impact strength slightly less than Russian specifications. B. Z. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Effect of pressure, grain size, and moisture of the mix upon the shrinkage of ceramic plates. S. M. Beluga and A. F. Zolotarog. *Stekło i Keram.* 7, No. 11, 20-2(1950).—Expts. were conducted with (1) Nikiforovk clay of SiO_2 52.08, Al_2O_3 28.9, Fe_2O_3 10.41, CaO 0.82, MgO 0.58, ignition loss 8.8%, refractoriness 1610°, sintering temp. 1150°, plasticity (Atterberg) class 1 and (2) Nikolaevsk clay of SiO_2 60.98, Al_2O_3 29.70, Fe_2O_3 2.80, CaO 1.00, MgO 0.61, ignition loss 8.76%, refractoriness 1610°, sintering temp. 1150-1200°, plasticity (Atterberg) class 1. For pressures of 100-200 atm., dimensional deviations reached 1.8 mm. and at 300 atm. 0.4-0.5 mm. Grain size (sieves of 25 to 100 openings per sq. cm.) had no significant effect on dimensional changes; the same was true for moisture changes between 7 and 8%. Water absorption of fired plates decreased with increasing pressure. For 100-300 atm., changing grain size affected water absorption but at over 300 atm. this was inconsequential. B. Z. Kasatkin

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Zolotarev, A. F., and Agafonov, V. K. MANUFACTURE OF GROGLESS REFRACTORY PRODUCTS. *Огнеупоры*, 8 [2] 122-25 (1940).—Experiments show that the production of grogless refractories from plastic refractory clay without adding leaning agents is possible by the semidry method. Such products possess a regular geometric shape, have a dense and homogeneous structure, and are as durable as similar grog products.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

B

Influence of Pressure, Particle Size, and Moisture Content of the Batch on Shrinkage of Ceramic Tiles. (In Russian.) S. M. Beluga and A. F. Zalotorog. *Steklo i Keramika* (Glass and Ceramics), v. 7, Aug. 1950, p. 20-22.

Results of investigation are tabulated and charted. Optimum conditions of production were determined.

COMMON ELEMENTS

MATERIALS INDEX

OPEN

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

C

Floor plates from Druzhkovsk clay deposits. S. M. Beluga and A. F. Zolotorog. *Stekla i Keram.*, 6 [6] 16-20 (1949). The increasing demands of the metallurgical industry for refractory products made from high-grade Chasov-Yar clay made it necessary to test "regular" (and "select") grades of Druzhkovsk clays of the following characteristics as substitutes in the manufacture of floor plates: SiO_2 56.86 (46.8), Al_2O_3 30.0 (37.48), Fe_2O_3 1.22 (1.32), CaO 0.7 (1.0), MgO 0.3 (0.3), ignition loss 7.9% (11.55%); sintering temperature 1280° (1200°); and refractoriness 1730° (1710°). In semicommercial experiments, well sintered colored plates of low mechanical strength but with a water absorption of 4% were prepared from the select grade without the use of fluxes, provided the clay was first given a plastic working. Regular grade clay, when treated by the plastic method, was satisfactory for colored plates provided 4.5 to 5% feldspar was added. In commercial experiments, the plates were formed in semiautomatic presses (2 stage pressure of 50 and 250 atm.). Rejects from the presses amounted to 10 to 12% for regular grade and 7 to 8% for select grade due to low mechanical strength, stratification, and insufficient demarcation and strength of the corners. The plates were fired in gas kilns at 1200°, in a strongly oxidizing atmosphere. They had a tendency toward surface deformation. The addition of feldspar may be raised to 10%, depending on the firing temperature. B. Z. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Bcs

Training, Separation, Storage

949. The influence of the pressure, grading and moisture content of the mix on the shrinkage of ceramic tiles.—S. M. [illegible] and A. F. [illegible] (Sod. Kerum., 7, No. 8, 20, 1950). An investigation showed that the deviations from the desired dimensions of products are mainly influenced by the pressure at which the ware is pressed. With low pressures (100–200 atm.) the deviations reach 1·4 mm., whereas ware pressed at 300 atm. shows deviations of 0·4–0·8 mm. Variations of moisture content between 7 and 8% and variations in grading have an essential effect on the linear dimensions. The influence of the grading on the water absorption occurs only at low pressures (100–150 atm.) and becomes negligible at pressures above 200 atm. The most suitable pressure is 300 kg/sq. cm. If the milling pressure is further increased, the firing temp. must be reduced. (5 figs., 4 tables.)

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

19

The production of grog-free refractory products. A. F. Zolotorov and V. K. Agafonov. *Ogneupory* 8, 122-5 (1940); *Chem. Zentr.* 1940, II, 678.—Good results were obtained in the exptl. production of grog-free furnace lining from plastic clay by semidry compression on both sides at pressures exceeding 100 kg./sq. cm. No non-plastic material was added.

M. G. Moore

COMMON ELEMENTS

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

CA

Floor tile from Druzhkovsk clay deposits. S. M. Selnik and A. F. Zelotorog. *Stekla i Keram.* 6, No. 6, 10-[illegible] (1949).—Demands of the metallurgical industry for refractories made from high-grade Chaney-Var clay made it necessary to test regular (and select) grades of Druzhkovsk clays of the following characteristics as substitutes in the manuf. of floor tile: SiO_2 66.80 (46.8), Al_2O_3 30.6 (37.4), Fe_2O_3 1.22 (1.22), CaO 0.7 (1.0), MgO 0.3 (0.3), ignition loss 7.9 (11.65)%; sintering temp. 1280 (1200°); refractoriness 1730 (1710°). In semicom. expts., well-sintered, colored tiles, of low mech. strength but with a water absorption of 4% were prepd. from select grade, without the use of fluxes, provided the clay was first pugged. Regular grade clay, when pugged, was satisfactory for colored tile when 4.5-6% feldspar was added. In com. expts. the tile was formed in semiautomatic presses (2-stage pressure of 50 and 250 atm.). Firing was in gas kilns at 1200°, in a strongly oxidizing atm. Addn. of feldspar can be increased to 10%, depending on the firing temp.

B. Z. Kamish

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

C

6

Effect of pressure, grain size, and moisture of the mix upon the shrinkage of ceramic plates. S. M. Beluga and A. F. Zolotorog. *Steklo i Keram.*, 7 [8] 20-22 (1950). Experiments were conducted with (1) Nikolaevsk clay of SiO_2 60.90, Al_2O_3 23.70, Fe_2O_3 2.90, CaO 1.00, MgO 0.68, ignition loss 8.70%, refractoriness 1610°C., sintering temperature 1150° to 1200°, and plasticity (Atterberg) class 1, and (2) Nikiforovsk clay of SiO_2 52.98, Al_2O_3 26.9, Fe_2O_3 10.41, CaO 0.82, MgO 0.58, ignition loss 8.9%, refractoriness 1480°C., sintering temperature 1150°, and plasticity (Atterberg) class 1. The firing temperatures were 1140°, 1160°, and 1180°. The greatest effect on the dimensional deviations was caused by pressure. For 100 to 200 atm. the deviations reached 1.8 mm. and at 300 atm. 0.4 to 0.5 mm. Moisture variation between 7 and 8% had no significant effect on changes in linear dimensions; the same was true of grain size (sieves of 25 to 100 openings per cm.²). The higher the pressure, the lower was the water absorption of the fired plates. At pressures of 100 to 150 atm. changing grain size affected the water absorption, but at over 200 atm. this was inconsequential. B.Z.K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

Bo abs.

Influence of pressure, grading, and moisture content of mix on shrinkage of ceramic tiles. S. M. Belaga and A. F. Zolotnaya (*Stek. Keram.*, 1950, 7, No. 8, 28; *Brit. ceram. Abstr.*, 1951, 1544).—Deviations from the desired dimensions are influenced mainly by the pressure at which the ware is pressed; at pressures of 100—200 and 300 atm. the deviations are 1·8 and 0·4—0·5 mm., respectively. Variations of moisture content between 7% and 8% and of grading have a negligible effect on the linear dimensions. The influence of the grading on moisture-absorption is noticeable at low pressures (100—150 atm.), but is negligible above 200 atm. The most suitable making pressure is 300 kg. per sq. cm. If the pressure is increased above this value the firing temp. should be reduced.

BRIT. CERAM. RES. ABS. (Cl).

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

FEDOROVA, N.I.; ZOLOTOR'YAN, T.G.; BRONSHTEYN, N.I.; DYKMAN, L.P.; VUNZEL', G.G.; YABLONSKAYA, Z.I.

Outbreak of Q fever among students of the Moscow Technological Institute of Meat and Dairy Industry. Zhur. mikrobiol., epid. i immun. 33 no.1:114-118 Ja '62. (MIRA 15:3)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR, Moskovskoy gorodskoy sanitarno-epidemiologicheskoy stantsii i Vsesoyuznogo instituta myasnoy promyshlennosti.
(Q FEVER)

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

L 21708-66 EWT(1)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) AT

ACC NR: AP6004885 SOURCE CODE: UR/0057/66/036/001/0111/0116

AUTHOR: Zolototrubov, I.M.; Rastrepin, A.B.; Skoblik, I.P.

ORG: none

TITLE: Investigation of the energy distribution in the hydrogen plasma from a coaxial plasma gun

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 1, 1966, 111-116

TOPIC TAGS: hydrogen plasma, plasma gun, mass spectrometry, ion energy, hydrogen ion

[illegible] energy distribution of hydrogen ions in hydrogen plasmas emitted by a [illegible] potential ap- [illegible] firing the [illegible] the plasma [illegible] through an open- [illegible] remained open [illegible] The gun was powered [illegible] kV 2 μF capacitor, the resonant period of [illegible] and [illegible] it was the entrance [illegible] mass spectrometer were accelerated [illegible] kV electric field [illegible] by a magnetic field and detected by a scintillation counter. The flight time of each ion from the mouth of the gun to the de-

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L 21708-66

ACC NR: AP6004885

tector was subtracted from the time at which it was recorded, thus determining the instant of origin. The current through the plasma gun and the potential at each end of [illegible] When the delay between opening the valve and [illegible] of the plasma ions was [illegible] the potential applied to the [illegible] and [illegible] ions with energies [illegible] substantially all the ions originated near [illegible] plasma gun. When the delay time was in- [illegible] the low energy peak shifted toward lower [illegible] times in the discharge cycle. These shifts [illegible] of the plasma gun was negative than [illegible] 155 [illegible] and the inner electrode was positive [illegible] and the ions originated at the in- [illegible] after application of [illegible] with the same [illegible] time and the inner electrode negative, the peak of [illegible] and the ions originated some 20-22 user after [illegible] observed phenomena are discussed at some length, [illegible] between the energy spectra of the ions observed [illegible] the inner electrode of the gun apparently reflects differences between the physical processes taking place in the two cases. Orig. art. has: 6 figures.

SUB CODE: 20/ SUBM DATE: 09Jan65/ ORIG REF: 008/ OTH REF: 007

Card 2/2

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

ZOLOTOTRUBOV, I.M.; RYZHOV, N.M.; SKOBLIK, I.P.; TOLOK, V.T.

[Properties of a plasma in a magnetic field] Issledovanie svoistv plazmy v magnitnom pole. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 269-279 p. (MIRA 17:1)
(Plasma (Ionized gases)) (Magnetic fields)

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

L 10710-67 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW

ACC NR: AR6020048 SOURCE CODE: UR/0276/66/000/001/B044/B044

32

AUTHOR: Zolotov, A. A.

TITLE: Use of electropulse machining in place of stamping for making components from sheet material

SOURCE: Ref. zh. Tekhnologiya mashinostroyeniya, Abs. 1B302

REF SOURCE: Sb. dokl. k. Novosib. nauchno-tekhn. konferentsii po mashinostr. Ch. 1. Novosibirsk, 1964, 25-34

TOPIC TAGS: electroerosion machining, metal stamping, sheet metal

ABSTRACT: Two methods are compared for producing massive sheet steel components (0.35-5 mm thick) for electrical machines and equipment: 1. on stamping machines and 2. by electropulse machining. The two methods are described in detail and their calculations are given together with a diagram for electropulse broaching of components with respect to contour. An analysis of the comparison of technical and economic indices for making components by both methods shows that the cost of the technological operation of making components by the electropulse method is less than that of stamping by a factor of 3-4. 3 illustrations, 3 tables. L. Tsukerman. [Translation of abstract]

SUB CODE: 13

Card 1/1 UDC: 621.789./.621.961

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S/057/60/030/07/03/014
B019/B054 82244

10.2000(A)

AUTHORS: Zolototrubov, I. M., Ryzhov, N. M., Skoblik, I. P., Tolok, V. T.

TITLE: Behavior of a Plasma in a Magnetic Alternating Field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 7, pp. 769 - 773

TEXT: In the present paper, the authors investigate the gas discharge without electrodes in a magnetic field of two single-turn coils fed by a capacitor battery. Fig. 1 shows the scheme of the experimental arrangement. It consists of a glass discharge tube with 100 mm diameter onto which the two copper windings are slipped. The capacitor battery has a capacity of 12.7 microfarad, and is charged to 30 kv. The maximum discharge current is 175 ka (with a central maximum magnetic field of 11 kilogauss). The oscillation period of the field is 13.5 microseconds. The photographs of discharges in Figs. 2a and 2b show that on amplification of the magnetic field the plasma gets loose from the walls, and contracts in a radial direction. Fig. 3a shows an oscillogram of the

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Behavior of a Plasma in a Magnetic Alternating Field

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B019/B054 82244

magnetic field measured with the measuring coil fixed outside to the glass tube, and Fig. 3b shows the axial magnetic field measured with a probe. Hence it appears that, on a reduction of the external magnetic field, the field in the interior of the plasma is reduced. If the external field becomes zero, the internal one is not zero and increases; its direction is opposite to that of the external one. In a brief theoretical deliberation it is shown that the product of the magnetic field intensity and the oscillation period is constant which also corresponds to the results of measurement (Table 1). A gamma emission with an intensity of $10^6 - 10^7$ quanta with energies of up to 50 kev was observed in the discharges. The most intensive emission was found at a pressure of $5 \cdot 10^{-3}$ torr. The authors thank K. D. Sinel'nikov, Academician of the AS UkrSSR, for valuable hints in the conduction of investigation. There are 3 figures, 1 table, and 2 non-Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov (Institute of Physics and Technology of the AS UkrSSR, Khar'kov)

SUBMITTED: November 30, 1959

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"APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7

22771

24.2120(1049,1141)
26.2321

S/057/61/031/005/002/020
B104/B205

AUTHORS: Zolototrubov, I. M., Novikov, Yu. M., Ryzhov, N. M., Skoblik, I. P., and Tolok, V. T.

TITLE: Magnetic compression of plasma

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 5, 1961, 518-521

TEXT: The heating of plasma by magnetic fields slowly varying in time is discussed in the introduction. It is shown that, if the variation is slow with respect to the Larmor period, the final energy of the particles will be determined only by their initial energy and by the ratio of field strengths at the beginning and at the end of the cycle of compressions. As the holding time is very short for small initial energies, compression must be done quickly. This can be achieved either by the use of strong and rapidly varying magnetic fields which ionize the gas through the induced eddy emf and compress the resulting plasma, or by means of two magnetic fields, one rapidly varying and heating the gas and the other slowly varying and compressing the plasma. The second method is more convenient for practical purposes. The authors dwell upon several papers

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B104/B205

Magnetic compression of plasma

including those by A. C. Colb (Phys. Rev., 112, 291, 1958), Colb et al. (Phys. Rev. Letters, 3, 5, (1959)) and Boyer et al. (Phys. Rev. 119, 831, 1960). Experiments with both kinds of plasma heating have shown that neutrons and soft X-rays are emitted as soon as maximum compression is attained, which is indicative of plasma heating. Colb's statement that the plasma is stable was refuted by I. F. Kvartskhava et al. (ZhETF, 38, 1641, 1960; ZhTF, XXX, 11, 1321, 1960). Here, an experiment is described, in which compression was effected by a slowly varying magnetic field. The experimental arrangement does not differ essentially from that used by Colb and others. The only difference is that the preliminary ionization was brought about by a shock wave produced by an induction discharge without electrodes (Fig. 1). The shock wave was produced by coil 1 (one winding) over which a capacitance of 6.3 μf charged up to 30 kv was discharged. The discharge took 6 μsec. The maximum magnetic field had a strength of 60 koe. The principal magnetic field was generated by coil 2 which consisted of 15 windings and generated a field of 85 koe. A camera was installed in the middle of this coil, between the windings. As the capacitance of the coil was much higher than that of the discharge circuit, the energy of the capacitor could be utilised up to 95 %.

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B104/B205

Magnetic compression of plasma

Discharge tube 3 was made of quartz and had an inner diameter of 3 cm and a length of 1 m. During the experiment the pressure could be measured within the range of $10^{-1} - 5 \cdot 10^{-2}$ mm Hg. A photograph [Abstracter's note: Not reproducible] shows that the velocity of the shock wave in the first semiperiod was not especially high but increased with increasing discharge. In the part of the shock wave where the gas was ionized by the preceding shock wave, its velocity was 5-6 times higher than in the part where the gas was not ionized. As the amplitude of the magnetic field diminished, the velocity of the shock wave tended toward a limit, i.e., the velocity of sound. Fig. 3 shows oscillograms of the magnetic field (a) and of the intensity of X-ray emission (б) and (в). The first pulse in 3б appeared in the second semiperiod of the principal magnetic field. 3в shows X-ray emission with a very long delay time. The optimum delay time was attained when the principal field was switched on after the sixth semiperiod. In this state, the velocity of waves produced by coil 1 was constant. It may be seen that the compression of the plasma by the principal field leads to instabilities accompanied by X-ray emission. A photographic film was used to study the regions of X-ray emission. The blackenings had a local character and were unevenly distributed between the middle of the coil and

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22771

Magnetic compression of plasma

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B104/B205

that end which was opposite to coil 1. K. D. Sinel'nikov, Member of the AS UkrSSR, is thanked for a discussion. There are 4 figures and 10 references: 7 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN USSR Khar'kov (Institute of Physics and Technology, AS UkrSSR, Khar'kov)

SUBMITTED: July 15, 1960

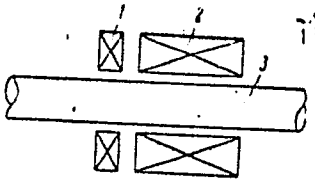
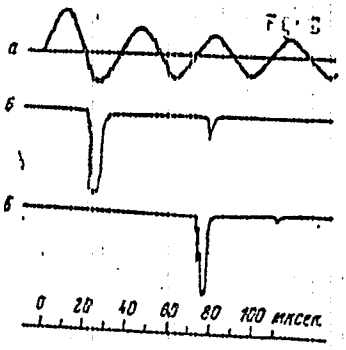


Fig 1



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34219
S/057/62/032/002/021/022
B124/B102

26.2311

AUTHORS: Zolototrubov, I. M., Novikov, Yu. M., and Kielev, V. A.

TITLE: Electrodynamic excitation of shock waves

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 2, 1962, 253 - 255

TEXT: The electrodynamic method described by John Marshall (Second International Conference on the Peaceful Uses of Atomic Energy, Geneva, 1958) was used to excite shock waves in a tube with continuous flow of an inert gas. The basic diagram of the setup used is shown in Fig. 1 and has been described in detail by the authors (ZhTF, 31, 5, 518, 1961), where it has been used to preheat the plasma. The maximum magnetic field below the single-turn coil was 45 kilogauss and the discharge took 6 μsec. It has been established that the moments of rise of the shock waves correspond to the zeros of the magnetic field (or to the maximum induction e. m. f.). The maximum propagation rate of the shock wave ($7.5 \cdot 10^6$ cm/sec) occurs in the third halfperiod of the current when the gas around the coil has been sufficiently ionized by the waves of the preceding halfperiods. Since the alternating magnetic field depends on the distance from the coil, the

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position of the boundary of the ejected plasma must be given by $nkT = \frac{H^2}{8\pi}$, where n is the particle density in the plasma. The H-field in the plasma boundary is graphically determined from the axial field distribution below the and around the coil at several instants of time. It varies only little within 2.5 μsec and remains at about 3 kilogauss. When complete ionization is assumed, the plasma temperature is estimated to be $1.2 \cdot 10^5$ °K. Plasma ejection in helium and oxygen is appreciable only from the 6th or 7th halfperiod onward. The authors thank K. D. Sinel'nikov, Academician AS UkrSSR, V. T. Tolok, N. A. Khizhnyak, B. G. Safronov, Candidates of Physics and Mathematics, and the scientific collaborators G. G. Aseyev and Yu. S. Azovskiy. There are 2 figures and 3 references: 2 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: A. C. Colb, Phys. Rev., 112, 291, 1958.

SUBMITTED: July 28, 1961

APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"

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ACCESSION NR: AP4013436 S/0057/64/034/002/0382/0384

AUTHOR: Zolototrubov, I.M.; Ry*zhov, N.M.; Skoblik, I.P.; Tolok, V.T.

TITLE: Plasma injection into an opposed field magnetic trap (Letter to the editor)

SOURCE: Zhurnal tekhn, fiz., v.34, no.2, 1964, 382-384

TOPIC TAGS: plasma, magnetic trap, opposed field magnetic trap, magnetic trap injection, magnetic trap escape, x-ray, x-ray burst

ABSTRACT: The injection of plasma into an opposed field magnetic trap of the type discussed by John E. Osher (Phys.Rev.Letters,8,305,1962) and others was investigated experimentally. The trap was formed in a 70 cm long 30 cm diameter vacuum chamber by the discharge of a bank of capacitors through two windings, each about one half of the chamber. The rise time of the magnetic field was 4.4 millisec and the subsequent decay time was 16 millisec. This behavior was achieved with the aid of a shunt circuit. The maximum magnetic field was 5 kOe in the mirror regions and 4.2 kOe in the gap. The plasma was injected axially through the magnetic mirror at the time of maximum field strength by an ordinary coaxial plasma gun. The gun was operated in two different modes. In one mode ("short delay") the plasma was emitted in

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ACCESSION NR: AP4013436

several bursts having different velocities. The velocity of the most rapid of those bursts was 8.8×10^7 cm/sec, corresponding to a hydrogen ion energy of 3.9 keV. The x-rays produced in the apparatus were recorded with a cesium iodide crystal, shielded from light by aluminum foil and located in the magnetic gap. A short burst of x-rays was always observed at the moment of injection. When the plasma gun was operated in the "short delay" mode there was observed, in addition to this, an intense emission of x-rays beginning 840 microsec after injection, reaching its peak at about 1500 microsec, and decaying with a 3 millisec time constant. The spatial and energy distributions of these x-rays were investigated with a photographic film and a step absorber. The x-rays were found to originate within the magnetic gap. The mean energy of the x-rays was 3.8 keV, corresponding to the energy of the injected hydrogen ions. It is concluded that the x-rays were produced by impact with the wall of the chamber of charged particles that were imprisoned for a time and then escaped through the magnetic gap. Orig.art.has: 3 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR, Khar'kov (Physical Technical Institute, AN UkrSSR)

SUBMITTED: 04Jul63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH, ED NR REF SOV: 000 OTHER: 003

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ACCESSION NR: AP4040300 S/0057/64/034/006/0998/1004

AUTHOR: Zolototrubov, I.M.; Kiselev, V.A.; Novikov, Yu.M.

TITLE: Investigation of the processes taking place within a coaxial plasma gun

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.6, 1964, 998-1004

TOPIC TAGS: plasma, plasma source, plasma physics, discharge tube, hydrogen plasma

ABSTRACT: The behavior of a coaxial plasma gun was observed with probes and high speed photography in order to elucidate the operating principles of this much used but not thoroughly understood device. The gun consisted of two 66 cm long coaxial cylinders 3.0 and 6.5 cm in diameter, closed at one end by a ceramic insulator and open at the other to a 10^{-6} mm Hg vacuum. Hydrogen (0.8 cm^3 at standard conditions) was admitted through an opening in the wall of the outer electrode midway between the ends by means of a quick acting electrodynamic valve. The gun was powered with a 12 microfarad capacitor charged to 20 kV. The total inductance was 0.3 microhenry, the half-period was 5 microsec, and the peak current reached 105 kA. A 0.077 ohm resistor made of coaxial cables with nichrome conductors was included in the circuit to damp the oscillations. The signal for the discharge of this system was given by

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ACCESSION NR: AP4040300

the behavior deduced from the probe measurements. [Abstracter's note: They are also said to show that a motion of the plasma away from the first current region sets in at about 3 microsec after onset of the discharge, but this important detail was not apparent to the abstracter and may have been lost in reproduction.] The electric and magnetic fields within the gun are calculated, and it is found that the drift velocity of the plasma in the crossed fields is at first about 1.8×10^7 cm/sec toward the open end of the gun. The drift velocity decreases with time and changes sign at 3.2 microsec after onset of the discharge. "In conclusion the authors express their gratitude to K.D.Sinel'nikov, member of the Academy of Sciences of the Ukrainian SSR, and to B.N.Rutkhevich, V.T.Tolok, O.M.Shvets and Ya.F.Volkov for criticism and discussion of the results." Orig.art.has: 8 formulas and 7 figures.

ASSOCIATION: none

SUBMITTED: 25Jun63 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: ME NR REF SOV: 002 OTHER: 004

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APPROVED FOR RELEASE: 03/15/2001 CIA-RDP86-00513R002065410015-7"