L 44552-66 EWP(e)/EWT(m)/EWP(t)/EWP(z)/EWP(b) IJP(c) JD/JG

ACC NR: AP6033991 SOURCE CODE: UR/0304/65/000/005/0084/0085

AUTHOR: Vladimirova, I. P. (Engineer); Zagrebel'naya, T. N. (Engineer); Kadaner, L. I. (Doctor of technical sciences)

ORG: none

TITLE: Electrochemical method of preparing electrolytes for iridium and ruthenium plating

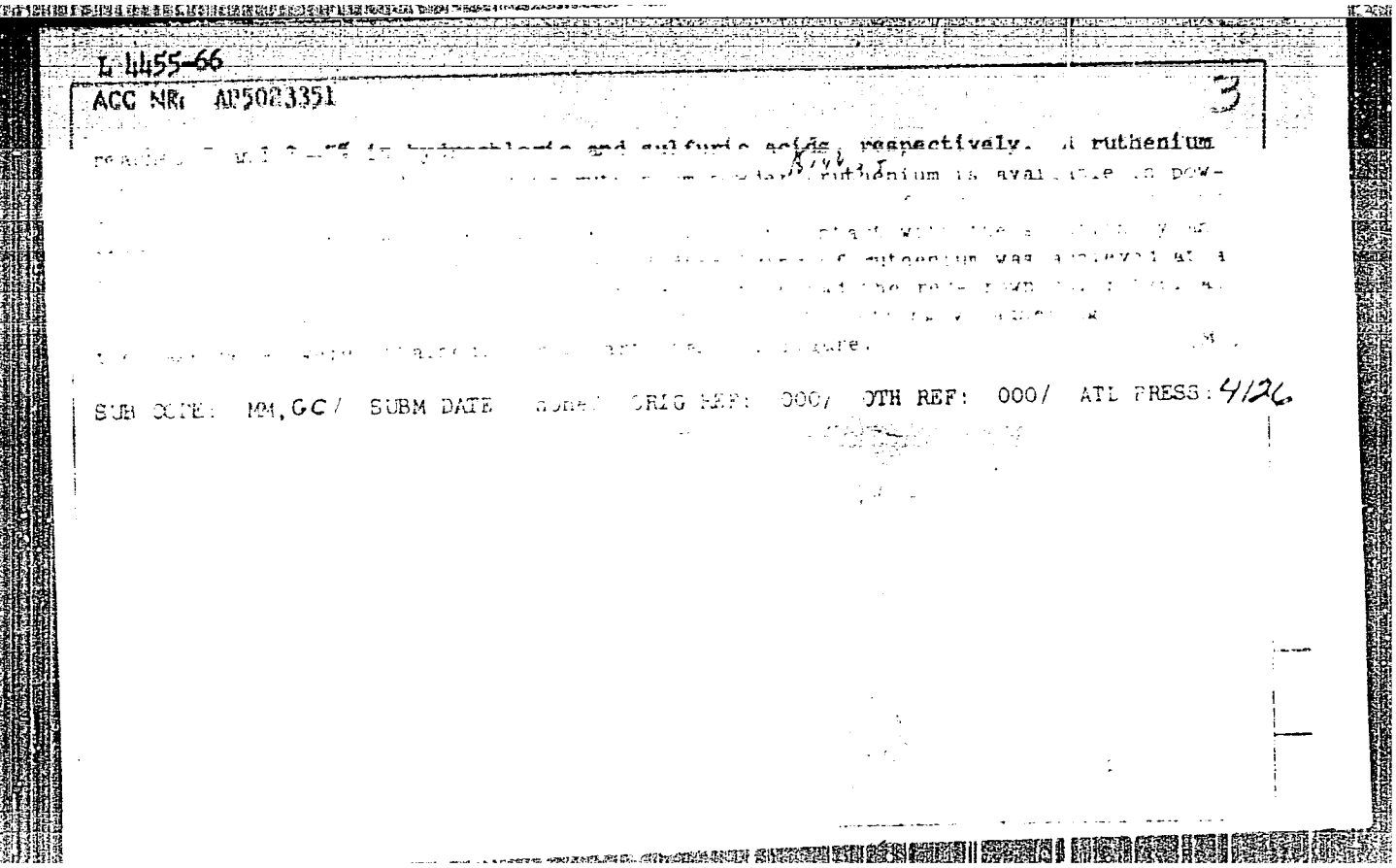
SOURCE: Mashinostroyeniye, no. 5, 1965, 84-85

TOPIC TAGS: metal plating, electrodeposition, ruthenium electrolyte, iridium electrolyte, iridium, iridium deposition, ruthenium, ruthenium deposition, electrolyte, electrolyte preparation

ABSTRACT: A simple method of preparing electrolytes for the electrodeposition of iridium and ruthenium (used for instance as protective coatings on molybdenum and stainless steels) is described. To prepare an iridium electrolyte, iridium plates are placed in a solution of sulfuric or hydrochloric acid and comparatively rapidly dissolved by passing an alternating current through the solution. The rate of dissolution depends on the current frequency and density. The maximum dissolution rate was achieved in a [illegible] HCl solution at [illegible] and a current density of 25—30 amp/dm². Increasing the current frequency from 20 to 50 cps increases the rate of dissolution under optimum conditions, the current efficiency

UDC: 621.357.5:546.96:546.93

Card 1/2



L 4455-66

ACC NR: AP5023351

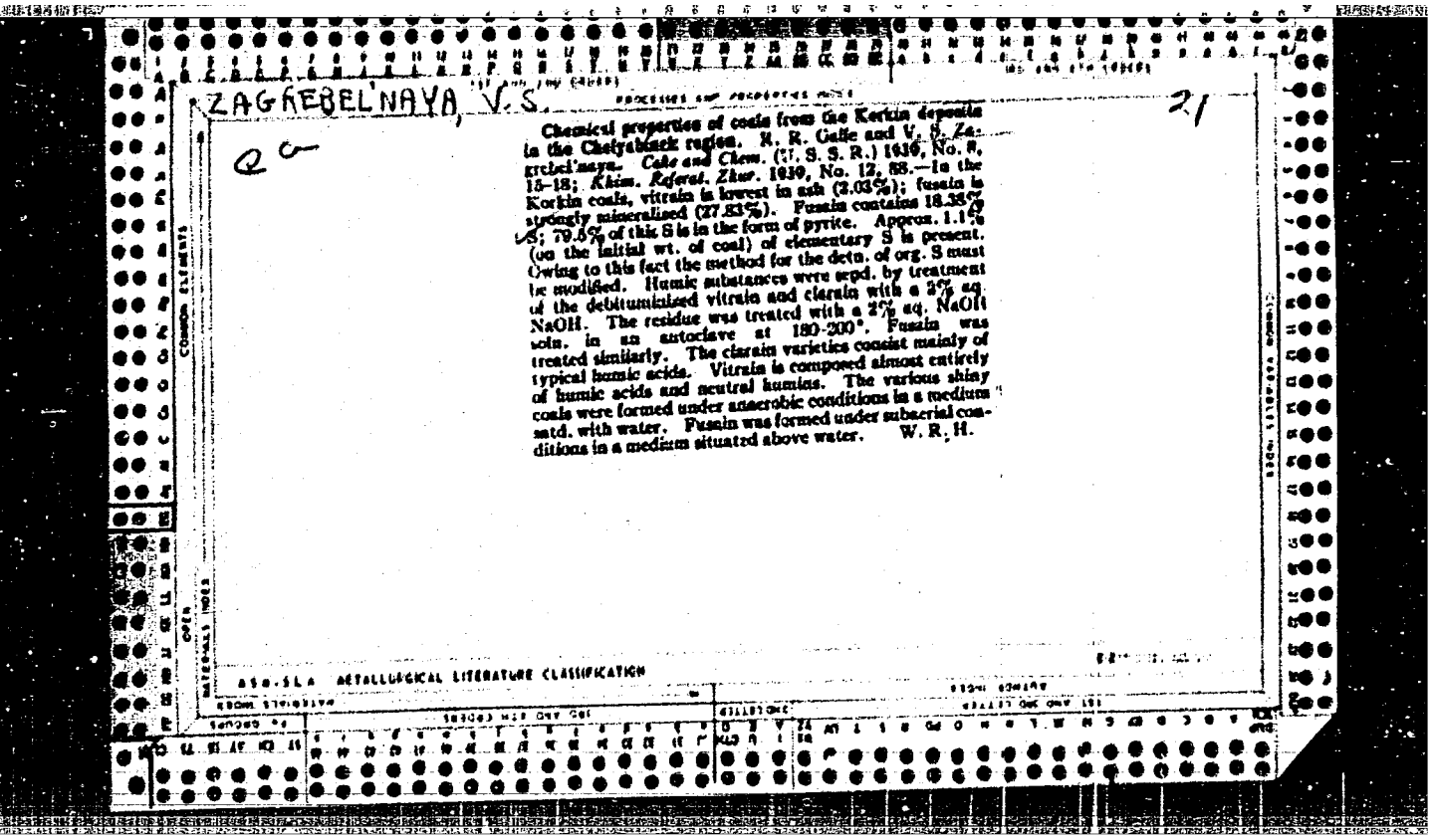
3

[illegible] and sulfuric acids, respectively. A ruthenium [illegible] ruthenium is avail[illegible] in pow-

[illegible] ruthenium was [illegible]

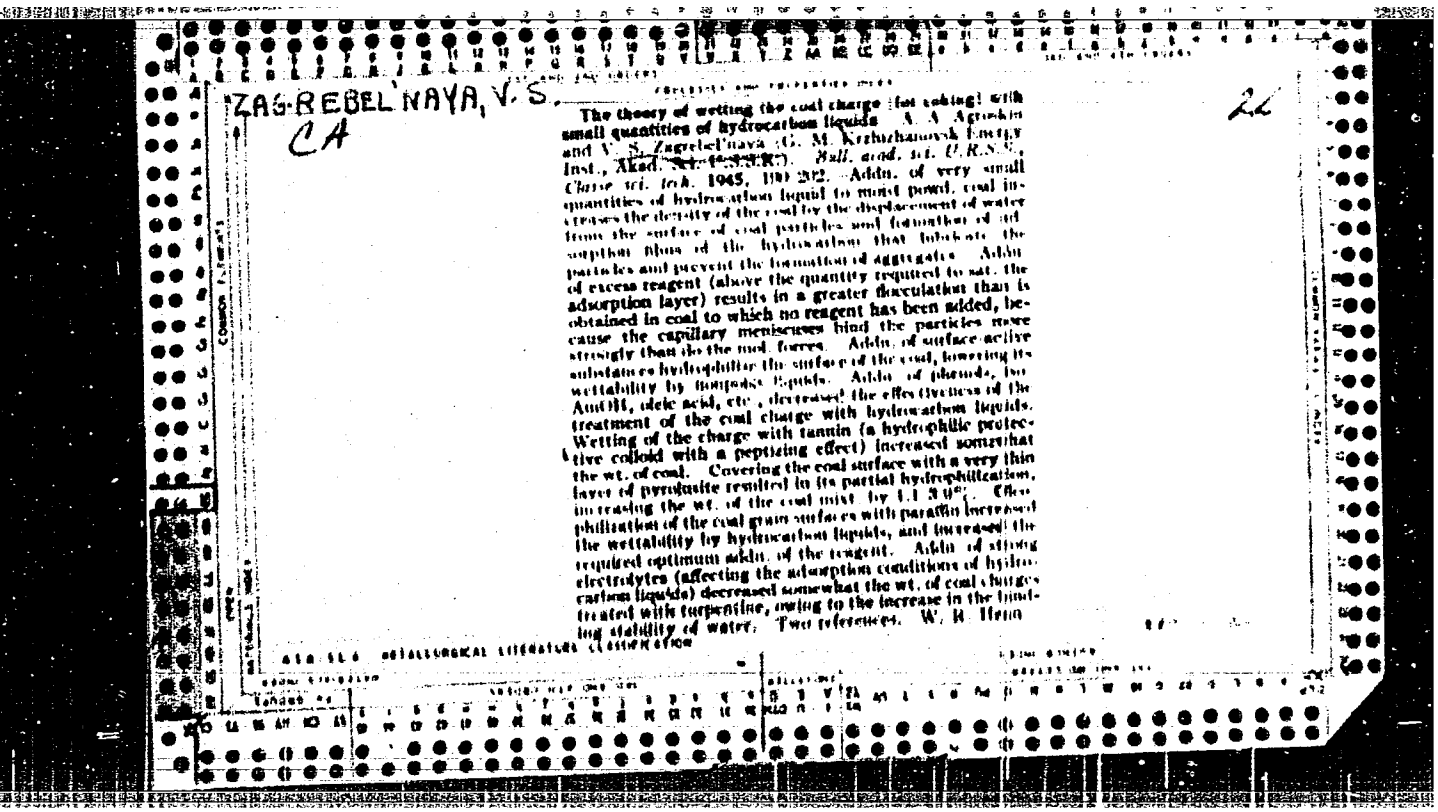
[illegible]

SUB CODE: MM,GC/ SUBM DATE [illegible] ORIG REF: 000/ OTH REF: 000/ ATL PRESS: 4126



ZAGREBEL'NAYA, V. S.

Chemical properties of coals from the Kertin deposits in the Chelyabinsk region. K. R. Gallé and V. S. Zagrebel'naya. *Coke and Chem.* (U. S. S. R.) 1939, No. 8, 15–18; *Khim. Referat. Zhur.* 1939, No. 12, 88.—In the Kertin coals, vitrain is lowest in ash (3.03%); fusain is strongly mineralized (27.83%). Fusain contains 18.38% S; 79.5% of this S is in the form of pyrite. Approx. 1.1% (on the initial wt. of coal) of elementary S is present. Owing to this fact the method for the detn. of org. S must be modified. Humic substances were sepd. by treatment of the debituminized vitrain and clarain with a 2% aq. NaOH. The residue was treated with a 2% aq. NaOH soln. in an autoclave at 180–200°. Fusain was treated similarly. The clarain varieties consist mainly of typical humic acids. Vitrain is composed almost entirely of humic acids and neutral humins. The various shiny coals were formed under anaerobic conditions in a medium satd. with water. Fusain was formed under subaerial conditions in a medium situated above water. W. R. H.

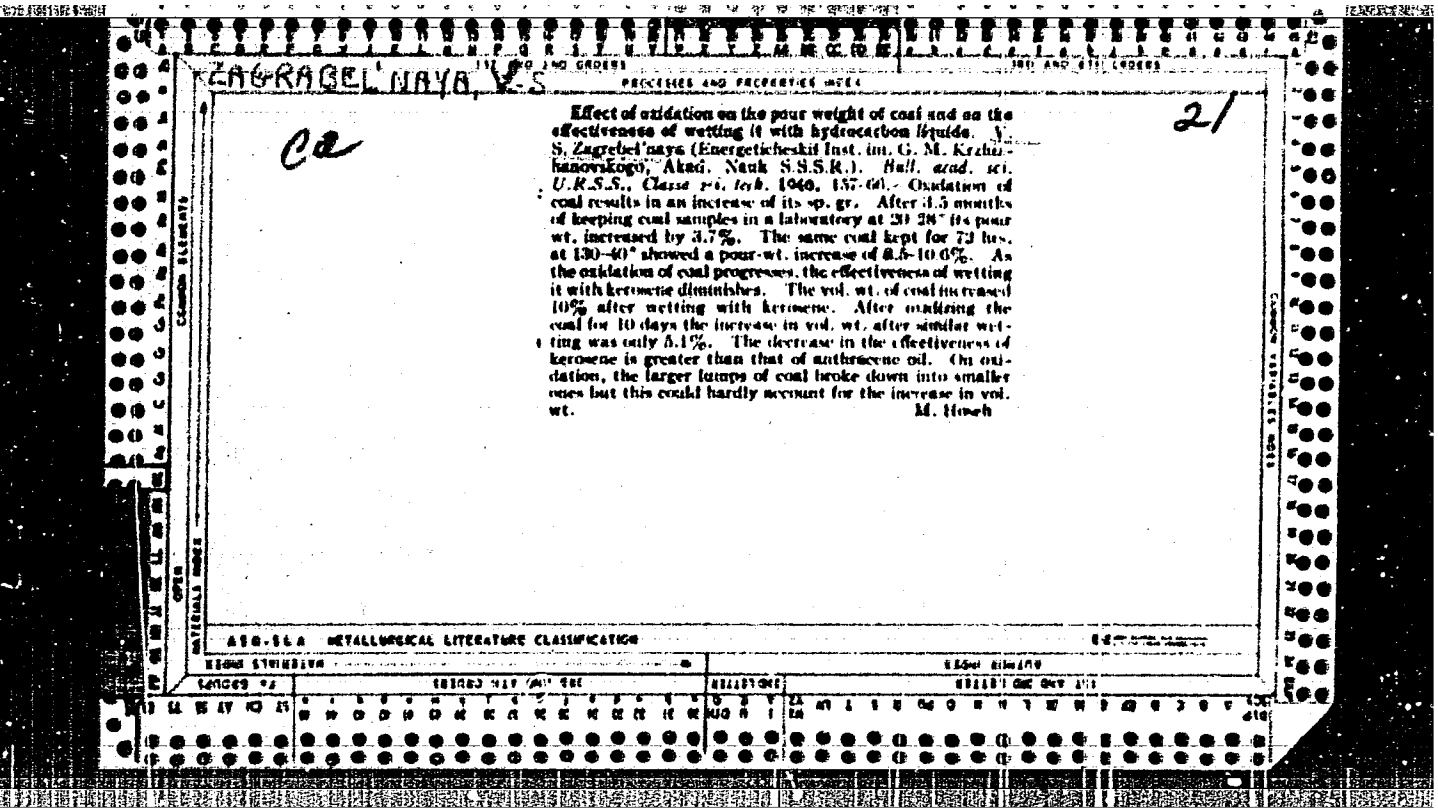


ZAG-REBEL'NAYA, V. S.

CA

22

The theory of wetting the coal charge for coking with small quantities of hydrocarbon liquids. A. A. Agroskin and V. S. Zagrebel'naya (G. M. Krzhizhanovsk Energy Inst., Akad. Sci. U.S.S.R.). *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1945, 199-212. Addn. of very small quantities of hydrocarbon liquid to moist powd. coal increases the density of the coal by the displacement of water from the surface of coal particles and formation of adsorption films of the hydrocarbons that lubricate the particles and prevent the formation of aggregates. Addn. of excess reagent (above the quantity required to sat. the adsorption layer) results in a greater flocculation than is obtained in coal to which no reagent has been added, because the capillary menisci exert bind the particles more strongly than do the mol. forces. Addn. of surface-active substances hydrophilize the surface of the coal, lowering its wettability by nonpolar liquids. Addn. of phenols, bu. AmOH, oleic acid, etc., decreased the effectiveness of the treatment of the coal charge with hydrocarbon liquids. Wetting of the charge with tannin (a hydrophilic protective colloid with a peptizing effect) increased somewhat the wt. of coal. Covering the coal surface with a very thin layer of pyrolusite resulted in its partial hydrophilization, increasing the wt. of the coal mist by 1.1-3.0%. Effective phillization of the coal grain surfaces with paraffin increased the wettability by hydrocarbon liquids, and increased the required optimum addn. of the reagent. Addn. of strong electrolytes (affecting the adsorption conditions of hydrocarbon liquids) decreased somewhat the wt. of coal charges treated with turpentine, owing to the increase in the binding stability of water. Two references. W. H. Henn



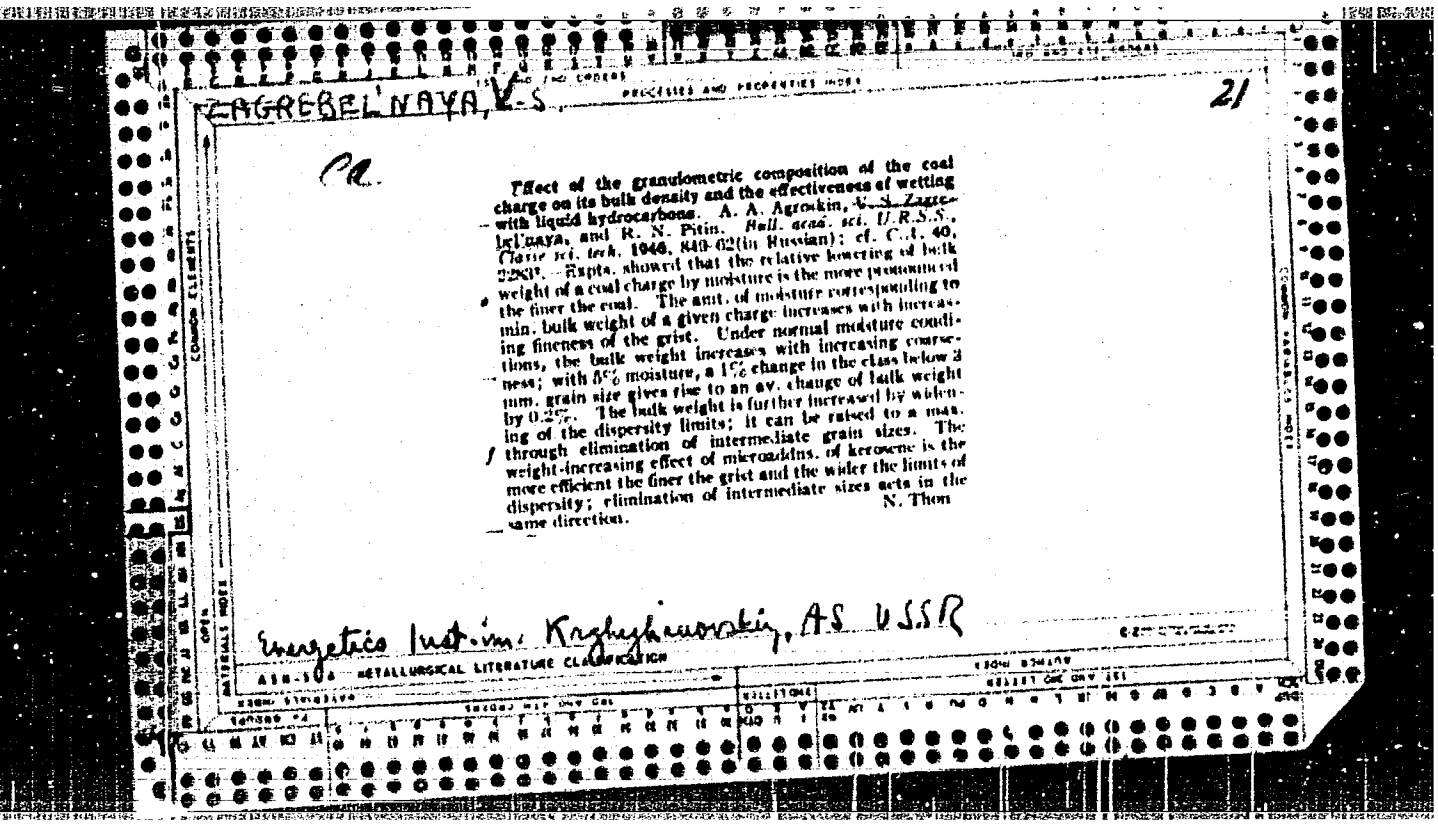
ZAGRAFEL'NAYA, V.S

Ca

21

Effect of oxidation on the pour weight of coal and on the effectiveness of wetting it with hydrocarbon liquids. V. S. Zagrebel'naya (Energeticheskii Inst. im. G. M. Krzhizhanovskogo, Akad. Nauk S.S.S.R.). *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1946, 157-66).- Oxidation of coal results in an increase of its sp. gr. After 4.5 months of keeping coal samples in a laboratory at 20-28° its pour wt. increased by 3.7%. The same coal kept for 72 hrs. at 130-40° showed a pour-wt. increase of 8.5-10.6%. As the oxidation of coal progresses, the effectiveness of wetting it with kerosene diminishes. The vol. wt. of coal increased 10% after wetting with kerosene. After oxidizing the coal for 10 days the increase in vol. wt. after similar wetting was only 5.1%. The decrease in the effectiveness of kerosene is greater than that of anthracene oil. On oxidation, the larger lumps of coal broke down into smaller ones but this could hardly account for the increase in vol. wt.

M. Hirsh



ZAGREBEL'NAYA, V. S.

21

Ca.

Effect of the granulometric composition of the coal charge on its bulk density and the effectiveness of wetting with liquid hydrocarbons. A. A. Agroskin, V. S. Zagrebel'naya, and R. N. Pitin. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1946, 849-62(in Russian); cf. C.A. 40, 2281. Expts. showed that the relative lowering of bulk weight of a coal charge by moisture is the more pronounced the finer the coal. The amt. of moisture corresponding to min. bulk weight of a given charge increases with increasing fineness of the grist. Under normal moisture conditions, the bulk weight increases with increasing coarseness; with 5% moisture, a 1% change in the class below 3 mm. grain size gives rise to an av. change of bulk weight by 0.2%. The bulk weight is further increased by widening of the dispersity limits; it can be raised to a max. through elimination of intermediate grain sizes. The weight-increasing effect of microaddns. of kerosene is the more efficient the finer the grist and the wider the limits of dispersity; elimination of intermediate sizes acts in the same direction.

N. Thon

Energetics Inst. im. Krzhizhanovskiy, AS USSR

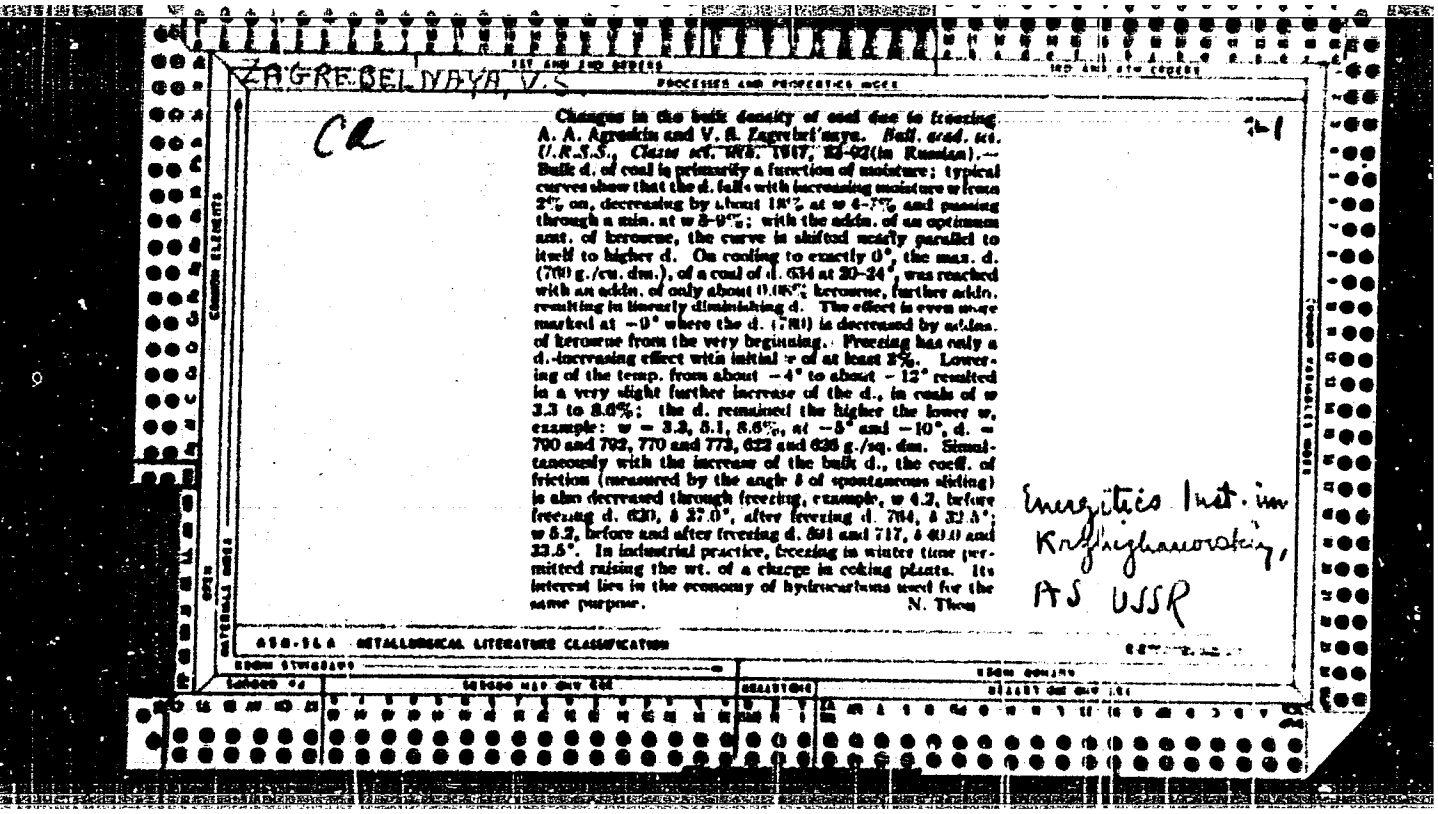
ZAGREBEL'NAYA, V. S. Cand. Tech. Sci.

Dissertation: "On the Theory of Wetting Crushed Coal with Microscopic Additions of Hydrocarbon Liquids by the Method of the Power Engineering Institute." Power Engineering Inst imeni Academician G. M. Krzhizhanovskiy, Acad Sci USSR, 13 Mar 47.

SO: Vechernyaya Moskva, Mar, 1947 (Project #17836)

AGROSKIN, A.A.; GRIGOR'YEV, S.M.; ZAGREBEL'NAYA, V.S.; LOSKUTOVA, Ye.N.; PETRENKO, I.G.; PITIN, R.N.; CHIZHEVSKIY, N.P., akademik, otvetstvennyy redaktor; VOROVITSKIY, I.B., redaktor; AUZAN, M.P., tekhnicheskiy redaktor

[Increase of the weight of coal per cubic meter by microadditives of liquid hydrocarbon; a collection of articles] Uvelichenie nasypnogo vesa uglia mikrodobavkami uglevodorodnykh zhidkostei; sbornik rabot. Moskva, Izd-vo Akademii nauk SSSR, 1947. 398 p.
(Coke) (Coal) (MLRA 9:9)



ZAGREBEL'NAYA, V. S.

Ca

Changes in the bulk density of coal due to freezing. A. A. Agroskin and V. S. Zagrebel'naya. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1947, 23-32 (in Russian).—Bulk d. of coal is primarily a function of moisture; typical curves show that the d. falls with increasing moisture w from 2% on, decreasing by about 18% at w 6–7% and passing through a min. at w 8–9%; with the addn. of an optimum amt. of kerosene, the curve is shifted nearly parallel to itself to higher d. On cooling to exactly 0°, the max. d. (700 g./cu. dm.), of a coal of d. 634 at 20–24°, was reached with an addn. of only about 0.08% kerosene, further addn. resulting in linearly diminishing d. The effect is even more marked at −9° where the d. (781) is decreased by addns. of kerosene from the very beginning. Freezing has only a d.-decreasing effect with initial w of at least 2%. Lowering of the temp. from about −4° to about −12° resulted in a very slight further increase of the d., in each of w 3.3 to 8.6%; the d. remained the higher the lower w, example: w = 3.3, 5.1, 8.6%, at −5° and −10°, d. = 790 and 792, 770 and 773, 622 and 626 g./sq. dm. Simultaneously with the increase of the bulk d., the coeff. of friction (measured by the angle δ of spontaneous sliding) is also decreased through freezing, example, w 4.2, before freezing d. 620, δ 37.0°, after freezing d. 704, δ 32.5°; w 5.2, before and after freezing d. 691 and 717, δ 40.0 and 33.5°. In industrial practice, freezing in winter time permitted raising the wt. of a charge in coking plants. Its interest lies in the economy of hydrocarbons used for the same purpose. N. Thon

Energetics Inst. im Krzhizhanovskiy, AS USSR

A50-51A METALLURGICAL LITERATURE CLASSIFICATION

ZAGREBEL'NAYA, V.S., kandidat tekhnicheskikh nauk.

Effect of static pressure in underground gas producers on gasification process indices. Podzem.gaz.ugl. no.2:51-54 '57. (MLRA 10:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut Podzemgaz.
(Coal gasification, Underground) (Coal geology)

Zagrebel'naya, V.S.

BRUSHTEYn, N.Z., kand.tekhn.nauk; ZAGREBEL'NAYA, V.S.

Effect of moisture on the underground gasification of coal.
Podzem.gaz.ugl. no.3:33-38 '57. (MIRA 10:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut podzemnoy gazifikatsii ugley.
(Coal gasification, Underground)

ZAGRUBEL'NAYA, V.S., kand.tekhn.nauk; KAZACHKOVA, S.TS.

Gasification of coal deposited in enclosing sandrock. Podzem.gaz. ugl. no.2:19-22 '59. (MIRA 12:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut podzemnoy gazifikatsii ugley.
(Coal gasification, Underground)

AGROSKIN, Anatoliy Abramovich. Prinimali uchastiye: GRIGOR'YEV, S.M., doktor tekhn. nauk; PITIN, R.N., doktor tekhn. nauk; PETRENKO, I.G., kand. khim. nauk; GOL'BERG, I.I., kand. fiz.-matem. nauk; ZAGREBEL'NAYA, V.S., kand. tekhn. nauk, dots.; GONCHAROV, Ye.I.

[Physics of coal] Fizika uglia. Moskva, Nedra, 1965. 351 p. (MIRA 19:1)

AGROSKIN, Anatoliy Abramovich; ZAGREBEL'NAYA, V.S., red.; ZINGER, S.L., red.izd-va; ISLENT'YEVA, P.G., tekhn.red.

[Physical properties of coals] Fizicheskie svoistva uglia. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 308 p. (MIRA 14:3)
(Coal)

ZAGREBEL'NAYA, V.S., kand.tekhn.nauk; ZVYAGINTSEV, K.N.

Gasification of Dnepr lignite. Podzem.gaz.ugl. no.4:10-13 '59. (MIRA 13:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut Podzemgaz.
(Dnieper Basin--Coal gasification, Underground)

ZYAZEV, V.L. (Sverdlovsk); ZAGREBEL'NIY, B.N. (Sverdlovsk); TANUTKOV, I.M. (Sverdlovsk)

Gas content of wire bar copper. Izv. AN SSSR. Otd. tekh. nauk. Met. i gor. delo no.1:80-86 Ja-F '63. (MIRA 16:3)
(Copper--Analysis) (Gases in metals)

ZAGREBEL'NYY, L.F.

Development of resistance in house flies to DDT preparations [with summary in English]. Med.parazi. i parazi.bol. 26 no.1:31-33 Ja-F '57. (MLRA 10:6)

1. Iz otdeleniya profilakticheskoy dezinfektsii Ukhtomskoy rayonnoy sanitarno-epidemiologicheskoy stantsii.

(FLIES
DDT-resist. develop in house flies)
(DDT, eff.
resist. develop. in house flies)

ACC NR: AP6033073 SOURCE CODE: UR/0218/66/031/005/0893/0901

AUTHOR: Zagrebel'nyy, S. N.; Knorre, D. G.

ORG: Institute of Organic Chemistry, Siberian Division, Academy of Sciences, SSSR, Novosibirsk (Institut organicheskoy khimii Sibirskogo otdeleniye Akademii nauk SSSR)

TITLE: Preparation and certain properties of peptide derivatives of tRNA

SOURCE: Biokhimiya, v. 31, no. 5, 1966, 893-901

TOPIC TAGS: biochemistry, peptide, RNA, biosynthesis, in vitro synthesis, enzyme, synthetase, synthesis inhibition, amino acid

ABSTRACT: Peptidyl of tRNA were obtained by condensation of aminoacyl tRNA with N-protected amino acids or peptides in the presence of cyclohexyl-beta-[N-(N-methylmorpholinium)]-ethyl carbodiimide. Hydrolytic stability of peptidyl-tRNAs corresponded with that of aminoacyl tRNAs in alkaline medium but was greater in neutral medium. The peptidyl tRNAs were similar in other physical properties. Peptidyl-tRNAs inhibit the formation of aminoacyl tRNAs. Orig. art. has: 9 figures and 1 table. [W.A. 50]

SUB CODE: 06/ SUBM DATE: 30Oct65/ ORIG REF: 005/ OTH REF: 009

Card 1/1 UDC: 547.963.3

ALTUNINA, V.K.; ZAGREBEL'NYY, S.N.; KUCHMA, D.G.

Transformation of amino acyl-sRNA into dipeptidyl-sRNA by using watersoluble carbodiimide. Biokhimiia 30 no.1:189-194 Ja-F '65. (MIRA 18:6)

1. Institut organicheskoy khimii Sibirskogo otdeleniya AN SSSR, Novosibirsk.

ACC NR: AP6033073 SOURCE CODE: UR/0218/66/031/005/0893/0901

AUTHOR: Zagrebel'nyy, S. N.; Knorre, D. G.

ORG: Institute of Organic Chemistry, Siberian Division, Academy of Sciences, SSSR, Novosibirsk (Institut organicheskoy khimii Sibirskogo otdeleniye Akademii nauk SSSR)

TITLE: Preparation and certain properties of peptide derivatives of tRNA

SOURCE: Biokhimiya, v. 31, no. 5, 1966, 893-901

TOPIC TAGS: biochemistry, peptide, RNA, biosynthesis, in vitro synthesis, enzyme, synthetase, synthesis inhibition, amino acid

ABSTRACT: Peptidyl of tRNA were obtained by condensation of aminoacyl tRNA with N-protected amino acids or peptides in the presence of cyclohexyl-beta-[N-(N-methylmorpholinium)]-ethyl carbodiimide. Hydrolytic stability of peptidyl-tRNAs corresponded with that of aminoacyl tRNAs in alkaline medium but was greater in neutral medium. The peptidyl tRNAs were similar in other physical properties. Peptidyl-tRNAs inhibit the formation of aminoacyl tRNAs. Orig. art. has: 9 figures and 1 table. [W.A. 50]

SUB CODE: 06/ SUBM DATE: 30Oct65/ ORIG REF: 005/ OTH REF: 009
Card 1/1 UDC: 547.963.3

PERSHINA, L.A.; ZAGREBEL'NYY, S.N.

Interaction of diethylchlorothiophosphate with hydrolytic lignin and its derivatives. Izv.TPI 111:46-50 '61. (MIRA 16:9)

1. Predstavleno professorom doktorom khimicheskikh nauk B.V. Tronovym.

(Thiophosphates) (Lignin)

Country : USSR
Category: Cultivated Plants. Grains.

M

Abs Jour: RZhBiol., No 22, 1958, No 100276

Author : Zagrebel'nyy, V.F.
Inst : Kuban Rice Experimental Station
Title : Irrigation of Rice at Rostovskaya Oblast'.

Orig Pub: V sb.: Kratkiye itogi nauchno-issled. raboty (Kubansk. ris. opytn. st.) za 1956 g. Krasnodar, "Sov. Kuban'", 1957, 59-65.

Abstract: In order to secure the optimum warm state of the water sheet in rice cultivation, the amount of water running through must not exceed 50-60% of all water comprising the irrigation norm. Irrigation of rice (flooding

Card : 1/2

Country : USSR
Category: Cultivated Plants. Grains.

M

Abs Jour: RZhBiol., No 11, 1958, No 48901

Author : Zagrebel'nyy, V.F.
Inst : Kalinin Kolkhoz, Krasnodarskiy Kray
Title : Determination of the Irrigation Rate for Rice on the Saline Soils of Rostovskaya Oblast.

Orig Pub: V. kn.: Kratkiye itogi nauch. issled. raboty za 1955 g., Krasnodar, "Sov. Kuban'", 1956, 145-154

Abstract: Water balance in a rice field, and the dynamics of the ground water were studied at the Kalinin Kolkhoz in Krasnodarskiy Kray. The irrigation rates were also determined. The soil and climatic conditions of Rostovskaya Oblast are very favorable for the

Card : 1/2

26733-66 EWT(i)/T IJP(c)

ACC NR: AP6013102 SOURCE CODE: UR/0102/66/000/002/0072/0075

AUTHOR: Zahrebel'nyy, V. I. -- Zagrebel'nyy, V. I. (Kiev)

ORG: none

TITLE: Determination of the optimal time interval for measuring the rotation velocity by the digital method

SOURCE: Avtomatyka, no. 2, 1966, 72-75

TOPIC TAGS: digital method, measurement error, time constant, rotation velocity

ABSTRACT: The errors arising in the digital method of measuring the rotation velocity have been analyzed. An equation is given for the error of discreteness and the upper estimate of the dynamic error with an arbitrary change with time in angular velocity. The optimum time interval of the velocity measurement, i.e., securing minimum

[illegible]

[illegible] (NT)

SUB CODE: 09/ SUBM DATE: 18Aug65/ ORIG REF: 002/ OTH REF: 004/

Card 1/1

ZAGREBEL'NYY, V.I. [Zahrebel'nyi, V.I.] (Kiyev)

High-accuracy control of the angular velocity of an electric drive.
Avtomatyka 10 no.2:70-75 '65. (MIRA 18:6)

ZAGREBEL'NYY, P.A.

3531. ZAGREBEL'NYY, P.A. Devushka iz Pridneprov'ya. (Mariya Karnoza. Geroy sots. Truda. Master Vysokikh Urozhaev Kukuruzy, Zven'evaya Kolkhoza im. Chkalova, Novomosk. Rayona Dnepropetr obl.) Kiev. "Molod", 1954. 60s; 1L Portr. 16sm 25,000ekz. 45k--Na ukryaz. (54-57539) 633.155+ (47.721)+ 331 (47) (092 Karnoza)

SO: Knizhnaya Letopis', Vol. 3, 1955

MOVCAN, D.A.; RABKIN, D.M.; GUREVIC, S.M.; ZAGREBENJUK; EMBULAJEV, N. [translator]

Technological peculiarities in welding by electron beam in vacuum. Zavarivac 5 no.4:12-13 '60.

ZAGREBENNIKOVA, M. P.

260T26

USSR/Metallurgy - Tensile Testing 11 Jun 53

"Effect of Changes in the Rate of Stressing on Plastic Tension," L. I. Vasil'yev, A. S. Bylina, M. P. Zagrebennikova, Sib Physicotech Inst, Tomsk State U

DAN SSSR, Vol 90, No 5, pp 767-769

Describes expts for tension of Cu and Sn specimens at room temp with varied rate of loading. Analyzes results, presented in graphical form, concluding that there is significant influence of rate of preceding deformation on course of

260T26

further deformation and therefore a current value of stress. In general case, does not represent a single-valued function of instantaneous values of deformation, its rate and test temp. Presented by Acad I. P. Barlin 14 Apr 53.

66513

18.8100 SOV/137-59-7-15644

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 7, p 208 (USSR)

AUTHORS: Savitskiy, K.V., and Zagrebennikova, M.P.

TITLE: The Effect of Sliding Speed on the Temperature Stability in Surface Layers of Cold Hardened Metals Subjected to Friction

PERIODICAL: Uch. zap. Tomskiy un-t, 1958, Nr 32, pp 188 - 193

ABSTRACT: Investigations were carried out into the effect of sliding speed upon temperature stability in cold hardened metal surfaces subjected to friction. Experiments were carried out on 10 x 10 x 10 mm^3 specimens of commercial and low carbon steel; the specimens were bored-out on the one side to a diameter of 6 mm; then they were polished with the use of a micro-sandpaper and annealed in a vacuum at 700°C for one hour. A hardened steel slide block of 10 x 10 x 50 mm^3 with fineground lateral surfaces was used as a counterbody. Grinding of the specimens was carried out on a special device with a pressure of 10 kg/mm^2 for Cu and 15 kg/mm^3 for steel, at a sliding speed $V_1 = 2.3 \cdot 10^{-4}$ cm/sec and $V = 3 \cdot 10^2$ cm/sec. Dynamic velocity was obtained by the impact of a falling load upon the front surface of the steel block. Changes in the properties of the

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66513

SOV/137-59-7-15644

The Effect of Sliding Speed on the Temperature Stability in Surface Layers of Cold Hardened Metals Subjected to Friction

specimen surfaces deformed by friction were evaluated by the magnitude of microhardness measured at a load of 20 g for Cu and 50 g for steel. It was stated that the sliding speed had a substantial effect on the properties of the metal surface layers and on the intensity of softening in subsequent annealing. It was assumed that the character of the deformation field with changing sliding speed depended upon the physical properties of friction bodies and other conditions of friction.

Z.F. 4

Card 2/2

ZAGREBENNIKOVA, M.P.

AUTHORS: Savitskiy, K. V. and Zagrebennikova, M.P. 126-1-17/40

TITLE: Influence of forced sliding at the faces on plastic compression of metals. (Vliyaniye prinuditel'nogo skol'zheniya v tortsakh na plasticheskoye szhatiye metallov).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.1, pp. 113-119 (USSR)

ABSTRACT: The influence is investigated of forced rotation of one of the supporting plates of a press on the deformation of metals during plastic compression. The curves obtained by the author are compared with the curves of the real compression stresses obtained in the case of lubrication on one side and in the case of cleaning of the supporting surfaces. Furthermore, the influence is investigated of the speed of sliding in the case of unidirectional and alternating rotation of the plate. It was established by Panin, V. Ye. (Ref.1) that intensification of the role of friction during compression leads not only to an increase of the deformation stresses and of the deformation work but also to the occurrence of additional distortions in the lattice of the deformed metal which brings about an increase of the latent deformation energy. It was found

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Influence of forced sliding at the faces on plastic compression of metals.

that, under conditions of intensive friction, a reduction takes place of the temperature stability of the deformation distortions. During static compression of specimens, the speed of sliding of metal along the supporting plates of the press is relatively small and, therefore, other conditions being equal, the friction coefficient of the specimen along the supporting plate will approach the values of the friction coefficient for moving from standstill. According to Kragel'skiy, I. V. (Ref.2), the coefficient of friction in the case of movement from standstill depends on the duration of the static contact and, therefore, it can be anticipated that with increasing deformation speed the friction between the specimen and the supporting plates of the press will decrease and thereby the slowing down effect of the friction on the deformation of the metal at the contact surfaces will also be reduced. Such a decrease in the friction coefficient with increasing deformation speeds was indeed observed by Gutkin, S.I. and Orlov, N. M. (Ref.3) during swaging of duraluminium through conical dies at room temperature as well as at elevated temperatures using various lubricants. This

Influence of forced sliding at the faces on plastic compression of metals.

indicates that the influence of the duration of the contact on the friction at the faces manifests itself also in presence of a lubricant. However, this effect is more pronounced for dry surfaces and elevated temperatures as can be seen from data published by Gubkin, S.I. and Orlov, N.M. (Ref.3). Thus, it could be anticipated that for a given degree of deformation a reduction of the contact time will in all cases result in a larger displacement of the metal along the supporting surfaces of the deforming tool. Therefore, in this paper the relations were studied which govern the plastic compression of metals under conditions of a moving contact at the face surface of a cylindrical specimen relative to the supporting plate of the press; in this case, the static friction between the support and the specimen is substituted by kinetic friction. In addition to the displacement of the metal specimen in the radial direction under the effect of normal forces, there will be a displacement caused by the friction forces and, therefore, the duration of the individual contacts will become considerably less and friction at the faces will

Influence of forced sliding at the faces on plastic compression of metals.

no longer play the same role as in the case of a static contact. A test set-up was built by fitting a special attachment to a table drill which enabled applying compression forces of up to 270 kg and, simultaneously, to rotate the upper supporting plate (sketch, Fig.1). The experiments were made applying two sliding speeds, namely, 0.5 and 8 r.p.m. with lubrication at one side by means of pure vaseline oil using cylindrical specimens of commercial tin and lead of 6 mm dia. and a height of 10 mm. The experimental results obtained using a unilateral lubrication without forced sliding and with forced sliding were compared with results of compression of specimens in the case of carefully cleaned supporting surfaces (washing with benzene and alcohol followed by rubbing with activated carbon). The changes in the dimensions of the front surfaces of the specimens as a function of the deforming force under differing conditions are graphed in Figs.2 and 3; in Figs.4 and 5 the dependence of the contact stresses on the relative reduction and the real average stresses are graphed. The numerical values of the contact and the real stresses during compression of specimens with forced sliding in

Influence of forced sliding at the faces on plastic compression of metals. 126-1-17/40

one direction and with alternating sliding are entered in a table, p.117. The results of the experiments have shown that plastic compression with forced sliding of the faces leads to a more uniform deformation requiring lower deformation stresses; this is attributed to the weakening of the blocking effect of the friction at the faces and a redistribution of the stresses as a result of the displacement of metal under the effect of forced sliding. Compression with sliding in alternating directions leads to a still higher reduction of the deformation stresses. These results are in good agreement with the data obtained earlier by G. D. Polosatkin. However, his explanation of the phenomena is different from that of the author of this paper.
There are 5 figures, 1 table and 5 references, all of which are Slavic.

SUBMITTED: April 23, 1956.
ASSOCIATION: Siberian Physico-Technical Scientific Research Institute. (Sibirskiy Fiziko-Tekhnicheskiy Nauchno-Issledovatel'skiy Institut).
AVAILABLE: Library of Congress.
Card 5/5

AUTHORS: Savitskiy, K. V., Zagrebennikova, M. P. 20-119-3-25/65

TITLE: An Investigation of the Temperature Stability of the Deformation Distortions and of the Kinetics of the Softening of the Friction Surface (Issledovaniye temperaturnoy ustoychivosti deformatsionnykh iskazheniy i kinetiki razuprochneniya poverkhnostey treniya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 3, pp. 490-493 (USSR)

ABSTRACT: As material for the investigation, which here is discussed, served polycrystalline copper. In 2 test series the influence of the gliding velocity and of the normal stress upon the intensity of the softening of the surface layers in dependence on the duration of annealing at various temperatures was investigated. The samples were heated either in a paraffin bath or in a lead bath to 200, 300, 350, 400, and 450°C. The duration of heating the test pieces was from 0,5 to 60 minutes. The decrease in strength was estimated from the magnitude of the micro hardness. A diagram illustrates the curves for the dependence of the micro strength of the friction surfaces of the copper samples on the duration of

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annealing at various temperatures. In all the cases of annealing temperatures the strength of the surface layers, which were deformed by friction, decreased much in the first minutes of annealing. Then this decrease becomes noticeably weaker and in case of sufficiently long duration of annealing the hardness reaches a certain stationary value. An exception is only the annealing at 300°C. The isothermal lines of recovery surpass the horizontal and this speaks for the fact that the distortions in a plastically deformed metal have different temperature stabilities. A successive increase of the annealing temperature on to a given temperature in the same samples does not decrease noticeably the stationary values of hardness compared with that case where the samples were annealed at this temperature without interruptions of annealing. In case of low gliding velocity the stationary value of the hardness at all annealing temperatures is reached in case of a relatively longer duration of annealing than in the case of the samples, which were worked at increased gliding velocity. The differences in the kinetics of the recovery and especially the presence of an inversion

of the isothermal curves speak for the following: The gliding velocity has a certain influence upon the temperature stability of the deformation distortions of the lattice of the surface layers of the metals, which actively take part in the friction. This influence still remains noticeable even after a one-hour annealing at 450°C. The second test series gave data on the influence of the normal pressure upon the softening of the friction surfaces at various temperatures in dependence on the duration of annealing. The velocity of the strength decrease of the sample, deformed at high normal pressures, in the initial state is always higher than in case of low pressures. In case of increase of the annealing temperature the velocity of the strength diminution of the samples decreases. A change of the external parameters of the friction leads to a change in the distribution of the deformation distortions with regard to the degree of their temperature stability. This also has a noticeable influence upon the intensity of the strength diminution of grating surfaces in the subsequent processes

An Investigation of the Temperature Stability of the Deformation Distortions and of the Kinetics of the Softening of the Friction Surface 20-119-3-25/65

of annealing.
There are 4 figures and 3 references.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete im. V. V. Kuybysheva (Siberian Physical-Technical Institute at the Tomsk State University imeni V. V. Kuybyshev)

PRESENTED: May 5, 1957, by I. P. Bardin, Member, Academy of Sciences, USSR

SUBMITTED: May 5, 1957

AVAILABLE: Library of Congress

Card 4/4

SAVITSKIY, K.V.; ZAGREBENNIKOVA, M.P.; ILYUSHCHENKOV, M.A.

Thermal stability at various friction conditions of cold hardening of surface layers of metal. Izv. vys. ucheb. zav.; fiz. no.3: 155-157 '58. (MIRA 11:9)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V. Kuybysheva.
(Steel--Hardening)

05749
SOV/32-25-10-38/63

28 (5)
AUTHORS: Zagrebennikova, M. P., Ilyushchenkov, M. A., Sukharina, N. N.

TITLE: Arrangement for the Compression-testing of Materials at Negative Temperatures

PERIODICAL: Zavodskaya laboratoriya, 1959, Vol 25, Nr 10, pp 1247 - 1248 (USSR)

ABSTRACT: The devices at present used for the compression-testing of materials at low temperatures have several disadvantages: Thus, the coolant can be poured on to the sample only at room temperature or at its boiling point temperature (Refs 1-3), so that only certain coolants may be used (Refs 2,3); or there is no possibility of using thermocouples for measuring the temperature of the sample (Ref 4) etc. A device was constructed in which these disadvantages are eliminated (Figure). It has a container for the cooling fluid, which is in form of a case, which contains the sample and the pressure piston. The small table upon which the sample is placed, and the piston are made from heat-conducting steel of the type R18. The thermocouple used for measuring the temperature of the sample is inserted into the table from below.

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Arrangement for the Compression-testing of Materials at Negative Temperatures

As the sample does not come into contact with the coolant, it is possible to use liquid air enriched with oxygen (as produced in devices of the type SK-05). It is possible to produce a stable temperature of down to -100°, and after a slight alteration of the device also down to -180°. There are 1 figure and 4 Soviet references.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut (Siberian Physico-technical Scientific Research Institute)

SAVITSKIY, K.V.; ZAGREBENNIKOVA, M.P.

Determining the dislocation density of the rubbing surface of copper specimens. Izv.vys.ucheb.zav.; fiz. no.5:149-151 '61. (MIRA 14:10)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete imeni V.V.Kuybysheva.
(Dislocations in crystals) (Copper)

SAVITSKIY, K.V.; ZAGREBENNIKOVA, M.P.

X-ray diffraction study of the thermal stability of work hardening on the rubbing surface of copper specimens. Izv.vys.ucheb.zav.; fiz. no.4:96-101 '61. (MIRA 14:10)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete imeni V.V.Kuybysheva.
(X-ray crystallography) (Copper--Thermal properties)

33717
S/686/61/000/000/010/012
D207/D303

18.8200 1454 1413

AUTHORS: Savitskiy, K. V., Sukharina, N. N. and Zagrebennikova, M. P.

TITLE: Effect of the degree of dispersion of hard occlusions on the wear resistance of two phase alloys

SOURCE: Soveshchaniye po voprosam teorii sukhogo treniya i obrazovaniya chstits iznosa pri sukhom trenii. Riga, 1959, 145-154

TEXT: The authors investigated the effect of the degree of dispersion (size and number of hard occlusions) of steels 45 and У8 (U8) and of Duralumin Д1 (D1) on their wear resistance under friction. The steels were quench-hardened at 820- 840°C and tempered at 680°C to obtain several series of samples containing different sizes and numbers of the hard Fe_3C occlusions. Duralumin was quenched and subjected to forced ageing in order to prepare four series of samples with different sizes and numbers of the hard $CuAl_2$ occlu-

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Effect of the degree ...

sions. The resistance to wear was found by dry sliding friction (1 m/sec and 30 kg load for steels, 1,1 m/sec and 20 kg/cm^2 pressure for duralumin) and by lubricated friction. Duralumin was also rubbed with emery cloth using the method of M. M. Krushchov and M. A. Babichev (Ref. 7: Sbornik: Treniye i iznos v mashinakh (Collection: Friction Wear in Machines), vol. IX, Izd. AN SSSR, 1954). The degree of dispersion was represented by the mean distance between occlusions (λ). Since the total amount of Fe_3C or $CuAl_2$ was the same in a given material, a small λ signified high degree of dispersion, i.e. a large number of small occlusions. A large value of λ represented a small number of large occlusions. The initial microhardness of the two steels and of duralumin was greatest in high-dispersion samples and smallest in those with low dispersion. The frictional wear of steels increased, in general, with decrease of microhardness, except in the softest samples where wear was unexpectedly relatively low. This was due to hardening of the softest steel samples (with the largest λ) by friction during tests; this hardening improved their wear resistance. The degree of

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Effect of the degree ...

friction hardening was greatest (about 370%) in the softest steel samples. In the case of duralumin the dry-friction wear was almost independent of λ and, therefore, of the initial microhardness, but the lubricated friction wear was greater in harder samples (small λ) than in softer ones. It was found that dry friction hardened the softer samples of duralumin in such a way that they all had the same microhardness. There are 6 figures, 2 tables and 12 Soviet-bloc references.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut (Siberian Physico-Technical Inatitute)

X

Card 3/3

S/123/61/000/023/001/018
A052/A101

AUTHORS: Savitskiy, K.V., Sukharina, N.N., Zagrebennikova, M.P.

TITLE: The effect of dispersion of solid inclusions on the wear resistance of two-phase alloys

PERIODICAL: Referativnyy zhurnal. Mashinostroyeniye, no. 23, 1961, 10, abstract 23A88 (V sb. "Sukhoye treniye", Riga, AN LatvSSR, 1961, 145 - 154)

TEXT: The dependence of the wear resistance of steel on the degree of dispersion of Fe_3C particles and of duralumin on the degree of dispersion of $CuAl_2$ inclusions was studied. In the process of wear of such alloys on hardened steel the plastic deformation of outside layers leads to an increased concentration of Fe_3C and $CuAl_2$ particles and to an increased hardness of friction surfaces. The degree of change of the initial structure and of mechanical properties increases with the transition to more coarse-dispersion materials. The deformation of outside layers due to friction and accompanied by a change of initial properties of alloys has a considerable effect on the wear resistance of the alloys, and can

Card 1/2

S/139/61/000/004/012/023
E194/E135

AUTHORS: Savitskiy, K.V., and Zagrebennikova, M.P.

TITLE: An X-ray study of the thermal stability of the cold working of friction surfaces of copper specimens

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Fizika. no. 4, 1961, 96-101

TEXT: Plastic deformation of friction surfaces causes considerable work hardening. In previous articles the authors have studied the temperature stability of work hardening of friction surfaces of various metals, the condition of the work hardened layer being characterised by the microhardness. The results observed in the earlier work indicate that during the process of friction the substructure of the active layer of metal becomes much finer. In the present work a work hardened layer produced by sliding friction on copper specimens was examined by the X-ray method to study changes resulting from repeated annealing. The samples were copper brake blocks 20 mm long, 3 mm thick, 10 mm high, curved to a radius of 70 mm to match the steel cylinder against which they rubbed. The frictional conditions

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An X-ray study of the thermal S/139/61/000/004/012/023
E194/E135

were those of boundary lubrication using machine oil under the following two conditions: 1) load equals 2.25 kg/mm^2 and speed equals 221 m/minute; 2) load equals 2.25 kg/mm^2 and speed equals 5.3 m/minute. For all specimens the length of the friction path was 15 km which was designed to produce sufficient wear products so that wear particles could be investigated at the same time as the surfaces. The high pressures were used to obtain a thick work-hardened layer which the X-rays would not penetrate. The thickness was found to be over 100 microns which is much greater than the layer thickness in which most of the primary beam intensity is absorbed. The wear products were particles of unoxidised copper of 10-20 microns, which, for X-ray study, were poured into a hole drilled in copper. The X-ray equipment used was type УРС-70 (URS-70) with copper radiation. Microhardness measurements were made and the microstructure of the active layer was studied. After the initial determination all the specimens were annealed in vacuum for one hour at the following temperatures in succession: 200, 250, 300, 350, 400 and 450 °C. Although the successive annealing reduced the microhardness considerably, for example, from 130 to 75, the annealed specimens were still appreciably harder

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than fully annealed copper which has a microhardness of 53. Investigation of the microstructure showed that although annealing at 450 °C makes the structure coarser, the grain size is still less than half that of the initial samples before friction. The full test results are given in the three curves of Fig.2; curves 1 correspond to a sliding speed of 221 metres/min, curves 2 to 5.3 metres/min, and curves 3 to wear products. Fig.2a shows the dimensions of regions of coherent scattering $D.10^6$ cm; Fig.2б shows the microdistortion $\Delta a/a \times 10^3$; and Fig.2в shows the microhardness, kg/mm^2; all as functions of the annealing temperature. The microhardness of the wear particles could not, of course, be measured. It has been claimed that there is a relationship between the Brinell hardness and the reciprocal of the square root of the grain size, and it may be assumed that a similar relationship also holds for the microhardness. Such a relationship was indeed found. It is concluded that the main factor in strengthening the friction surface of the copper specimens is reduction in the size of the regions of coherent scattering. Although the physical and mechanical properties of frictional surfaces treated at different speeds resemble one

another very closely in respect of the changes on repeated annealing, nevertheless the entire recrystallisation curve for the friction surface run at the lower speed lies below that for the curve of higher speed. The curve of change of grain size on the friction surface as a function of the annealing temperature for the lower speed is always above that for the higher speed. Work-hardening of the wear particles is much greater than that of the friction surfaces, their grain sizes are smaller and their micro-distortion greater. G.V. Kurdyumov and L.I. Lysak are mentioned in the paper for their contributions in this field.
There are 3 figures, 2 tables and 9 Soviet-bloc references.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V. Kuybysheva
(Siberian Physico-technical Institute at Tomsk State University imeni V.V. Kuybyshev)

SUBMITTED: December 12, 1960

Card 4/4

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S/139/61/000/005/011/014
E073/E335

AUTHORS: Savitskiy, K.V. and Zagrebennikova, M.P.

TITLE: Determination of the density of dislocations at the friction surface of copper specimens

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, no. 5, 1961, pp. 149 - 151

TEXT: In most annealed specimens the density of dislocations exceeds 10^6 per cm^2. Depending on the type and purity of the metal, and on the type, degree and temperature of deformation, the density of dislocations as a result of deformation increases to 10^8 - 10^{11} per cm^2. Williamson and Smallman (Ref. 1 - Russian translation published in Sbornik "Problemy sovremennoy fiziki", 9, 95, 1957) have proposed a formula based on the block dimensions D and the width of the distribution of dislocations ξ. The density of dislocations can be expressed by means of the block dimensions, using the formula:

$$\rho = 3n/D^2 \qquad (1)$$

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Determination of ....

where n is the number of dislocations at the surface of the block which have to be determined, or are given. n = 1 yields the minimum dislocation density and can be applied to annealed and to highly deformed metals, when the distribution of the dislocations is almost chaotic. Friction-working, applying a pressure of 2.25 kg/mm^2 and a speed of 121 m/min increased the microhardness of the rubbing surfaces of copper specimens to 130 kg/mm^2, as compared with 53 kg/mm^2 of the annealed copper. When the friction treatment was applied, using an equal pressure and a speed of only 5.3 m/min, the microhardness of the active surface layer reached 127 kg/mm^2. Due to the very high deformation in both cases, it is justified to use the value n = 1 in calculating the dislocation densities in the friction work-hardened layer. The block dimensions on the friction surfaces and in the wear products were determined from the width of the diffraction lines (111) and (331) and from these, the density of the dislocations ρ was calculated. The obtained data show

Determination of ....

that a change in the sliding speed by a factor of 25 has practically no influence on the magnitude of work-hardening of the copper in the thin active layer (the microhardness values being, respectively, 127 and 130 kg/mm^2). However, the dislocation densities were, respectively, 6 and 8 x 10^{-11} cm/cm^3, as compared with 25 x 10^{-11} cm/cm^3 of the wear products. The dislocation density was also calculated from the measured microhardness values in accordance with the formulae proposed by S.D. Gertsriken and N.N. Novikov - Sbornik "Issledovaniya po zharoprochnym splavam", 6, 105, 1960 (Ref. 4). The results are in agreement with those obtained from the block dimensions and, consequently, dislocations in materials can also be estimated on the basis of hardness values. Dilatometric measurements in copper deformed to a high degree by torsion showed values of 4.6 x 10^{11}. Therefore, it is concluded that in the case of friction, the rubbing surfaces accumulate dislocations many times the number which are accumulated during torsion and

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Determination of ....

this explains the intensive work-hardening of rubbing surfaces. There are 2 tables and 4 Soviet-bloc references.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V. Kuybysheva (Siberian Physicotechnical Institute of Tomsk State University imeni V.V. Kuybyshev)

SUBMITTED: June 23, 1961

Card 4/4

SAVITSKIY, K.V.; ZAGREBENNIKOVA, M.P.; REBENOK, V.F.

Effect of the dispersity of $CuAl_2$ inclusions on the behavior of duralumin under conditions of deformation with variations in the testing temperature. Izv. vys. ucheb. zav.; fiz. no. 1:168-170 '60. (MIRA 13:12)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete imeni V.V. Kuybysheva.
(Duralumin)

KUZNETSOV, V.D.; SAVITSKIY, K.V.; ZAGREBENNIKOVA, M.P.

Effect of dispersivity of $CuAl_2$ particles on the temperature-velocity relation of the mechanical properties of duralumin during compression. Issl. po zharopr. splav. 6:49-55 '60. (MIRA 13:9)
(Duralumin--Metallography) (Deformations (Mechanics))

ZAGREBENNIKOVA, M.F.

PHASE I BOOK EXPLOITATION SOV/4502

Akademiya nauk SSSR. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, tom 6 (Investigations of Heat-Resistant Alloys, Vol. 6) Moscow, 1960. 319 p. Errata slip inserted. 3,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova. Nauchnyy sovet po probleme zharoprochnykh splavov.

Editorial Board: I. P. Bardin (Deceased) Academician, G. V. Kurdyumov, N. V. Ageyev, Corresponding Member, Academy of Sciences USSR (Resp. Ed.), I. A. Oding, I. M. Pavlov, and I. F. Zudin, Candidate of Technical Sciences; Ed. of Publishing House: V. A. Klimov; Tech. Ed.: S. G. Tikhomirova.

PURPOSE: This book is intended for research workers in the field of physics of metals and for metallurgists, particularly those working on heat-resistant alloys.

COVERAGE: This collection of 45 articles deals with various problems in the production of heat-resistant alloys. Special attention is paid to the mechanisms of deformation of such metals as aluminum, copper, iron, and nickel. Various defects and failures of metals are analyzed, and means for increasing the heat resistance and plasticity are described. Among the special problems discussed are: electrolytic conductivity of iron-aluminum alloys in the solid state; the mobility of atoms in nickel-iron alloys, depending upon defects of their crystalline structure; the kinetics of change in isolated pores; the irreversible thermal transformation of solid bodies, etc. No personalities are mentioned. References follow each article.

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SAVITSKIY, K.V.; ZAGREBENNIKOVA, M.P.

Effect of the dispersity of $CuAl_2$ inclusions on the temperature-rate dependence of the mechanical properties of duralumin. Izv. vys.ucheb.zav.; fiz. no.6:14-20 '59. (MIRA 13:6)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V.Kuybysheva.
(Duralumin) (Aluminum compounds)

ZAGREBENNIKOVA, M.P.

Effect of the forced slip of the faces on the plastic compression of metals. Izv.vys.ucheb.zav.; fiz. no.6:171-172 '59. (MIRA 13:6)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V.Kuybysheva.
(Metals--Testing)

69454

18,8100 S/139/60/000/01/029/041
E073/E335

AUTHORS: Savitskiy, K.V., Zagrebennikova, M.P. and Rebenok, V.F.

TITLE: Influence of the Degree of Dispersion of $CuAl_2$ Inclusions on the Behaviour of Duralumin Under Conditions of Deformation with a Variable Test Temperature

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, Nr 1, pp 168 - 170 (USSR)

ABSTRACT: In an earlier paper (Ref 2) the authors studied the influence of the degree of dispersion of $CuAl_2$ inclusions on the temperature and the speed dependence of the mechanical properties of duralumin under conditions of simple compression; they found that the dimension and the distribution of particles of the second phase show a considerable influence on the slip process. The present paper is devoted to the study of the behaviour of duralumin D1 with various degrees of dispersion of the hard $CuAl_2$ particles under conditions of variable test temperatures during deformation. It was anticipated that under such complicated conditions of deformation the advantages of a given structure should manifest themselves

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Influence of the Degree of Dispersion of $CuAl_2$ Inclusions on the Behaviour of Duralumin Under Conditions of Deformation with a Variable Test Temperature

most clearly. Also such investigations may yield additional information for verifying the correctness of the mechanical equalisation of the state for alloys, namely, they may indicate the role of secondary processes during deformation of the alloy under such conditions. Such investigations are of practical interest from the point of view of aviation, since duralumin aircraft components are required to work under a variety of conditions, including considerable temperature variations. The aim of the work described in this paper was to investigate the behaviour of duralumin in various states, differing from each other in the degree of dispersion of the $CuAl_2$ particles, under conditions of changing temperature. The degrees of dispersion were as follows: I = average particle distance $r = 0.8\ \mu$; II = average distance between the particles $r = 1.1\ \mu$; III = average distance between the particles $r = 1.5\ \mu$ and IV = average distance between the particles $r = 2.2\ \mu$. In earlier work (Ref 2)

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it was found that the most metastable material is duralumin with IV-th degree dispersion, whilst the metastability of the material with degrees I, II and III of dispersion is slight and approximately the same. The authors investigated the effects of the following temperature variations during compression:
1) - 80 → 20 → 155 °C; 2) 20 → - 80 → 155 °C;
3) 155 → 20 → - 80 °C; 4) 20 → 155 → - 80 °C.
The changes in the test temperature were achieved as follows: at the temperature T_1 the specimen was compressed by 10%, relieved of the load and placed into a second sleeve which had the required temperature T_2 and again compressed a further 10%; the last reduction step of the specimens was effected in a third sleeve with the temperature T_3 in the working space; thereby the deformation speed was 0.17 mm/min. For obtaining each of the curves, 5 specimens were deformed under the conditions of a given temperature change; the maximum deviation from the average value of σ was 1-2% or 0.3 - 0.6 kg/mm^2. The

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Influence of the Degree of Dispersion of $CuAl_2$ Inclusions on the Behaviour of Duralumin Under Conditions of Deformation with a Variable Test Temperature

obtained results indicate that in many cases for duralumin, which in the θ-solid solution has hard inclusions of various sizes, definite relations can be observed in the characteristics of the flow curves, which are similar to those obtained by other authors in tensile tests with pure metals. Figure 1 is a plot of the flow curves of duralumin of the degree of dispersion II during compression under conditions of the temperature variations: - 80 → 20 → 155 °C. The full dots indicate values measured in the case of continuous compression; the circles indicate the values obtained in the case of compression under conditions of changing temperature. Figure 2 shows similar curves for duralumin with the degree of dispersion IV in the case of compression with a temperature changing from 155 → 20 → -80°C. The results show that the degree of dispersion of the solid inclusions has a definite influence on the characteristics of the flow curves in tests under changing

Card4/5

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Influence of the Degree of Dispersion of $CuAl_2$ Inclusions on the Behaviour of Duralumin Under Conditions of Deformation with a Variable Test Temperature

temperature conditions. Additional ageing of the alloy during deformation at elevated temperature (155 °C) can lead to a deviation from the regular shape of the flow curves established by a number of authors during testing of pure metals.
There are 2 figures and 5 references, 1 of which is international, 1 English and 3 Soviet.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V. Kuybysheva (Siberian Physico-technical Institute of Tomsk State University imeni V.V. Kuybyshev)

SUBMITTED: August 3, 1959

Card5/5

65148

S/139/59/000/06/004/034
E091/E135

18.1210

AUTHORS: Savitskiy, K.V., and Zagrebennikova, M.P.

TITLE: Influence of Dispersion of $CuAl_2$ Inclusions on the Temperature-Rate Dependence of Mechanical Properties of Duralumin

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 6, pp 14-20 (USSR)

ABSTRACT: The behaviour of duralumin D-1 (Cu 3.94%, Mg 0.59%, Fe 0.54%, Mn 0.76% and Al 94.17%), in which $CuAl_2$ particles of various sizes are dispersed through a θ-solid solution matrix, was studied at various temperatures and at various compression rates. The degree of dispersion of the particles was judged by their number per sq mm (which varied between 115.10^4 and 32.10^4) and also by the value of r, the mean distance between the particles (which varied between 0.8 μ and 2.2 μ). In view of the fact that the grain size of the matrix can exert a considerable influence on the mechanical properties of the material, the authors tried to minimise the influence of this factor by ensuring an approximately equal grain size of the matrix in all investigated specimens (0.06-0.08 mm). From the material

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Influence of Dispersion of $CuAl_2$ Inclusions on the Temperature-Rate Dependence of Mechanical Properties of Duralumin

to be investigated, cylindrical specimens (7 x 11 mm) were made for compression tests, which were subsequently heat treated in such a way as to obtain $CuAl_2$ inclusions of various sizes. In the first part of the work, the behaviour of duralumin in compression at the following temperatures was studied: -80, 20, 90, 155, 230, 300 and 390 °C. The rate of deformation was 0.17 mm/minute. A special muffle, which has been described by Zagrebennikova, Ilyushchenkov and Sukharina (Ref 5) was used for low temperature tests (at -80 °C). In Fig 1a the path of flow curves is shown for duralumin through the matrix of which extremely fine particles of $CuAl_2$ are dispersed (dispersion I, $r = 0.8\ \mu$). Fig 1b shows the results for duralumin, in which $r = 1.1\ \mu$ (dispersion II). Fig 1c corresponds to a material with a particle dispersion III ($r = 1.5\ \mu$). From Fig 2 the path of flow curves for material having the coarsest $CuAl_2$ inclusions (dispersion IV, $r = 2.2\ \mu$) can be seen. Fig 3 shows the dependence of the stress σ_{30}, corresponding to a deformation of

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30%, on deformation temperature. Curves 1, 2, 3 and 4 are given for material exhibiting the respective dispersions. Fig 4 shows the dependence of σ_{30} on the logarithm of the mean distance between $CuAl_2$ particles. Figs 5, 6 and 7 show flow curves for quenched duralumin with dispersions I, II, III and IV of $CuAl_2$ particles, at various temperatures of deformation (T_{def}). In Fig 5 T_{def} = -80 °C; in Fig 6 T_{def} = 20 °C; and in Fig 7 T_{def} = 155 °C. In all three figures, the black circles correspond to the standard rate of deformation (0.17 mm per minute) and the white circles to different rates of deformation. The authors arrive at the following conclusions: 1) The size of the hard inclusions exerts a considerable influence on the resistance of the alloy to deformation. Alloys with the greatest dispersion of hard inclusions within the whole range of temperatures and rates of deformation investigated have the highest mechanical properties. The greater resistance to compression exhibited by duralumin with the coarsest $CuAl_2$

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inclusions, as compared with that of material of dispersion III, in the temperature range 90-155 °C, is due to additional ageing of this alloy during deformation. 2) The dependence of stress σ_{30} on the logarithm of the mean distance between $CuAl_2$ particles is linear in nature in the whole temperature range investigated, except for the range 90-155 °C, in which the deviation is also due to additional ageing of the alloy during deformation. There are 7 figures and 7 references, of which 2 are English and 5 are Soviet.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V. Kuybysheva (Siberian Physico-Technicological Institute, Tomsk State University imeni V.V. Kuybyshev)

SUBMITTED: April 11, 1959

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S/139/59/000/06/028/034
E201/E191

AUTHOR: Zagrebennikova, M.P.

TITLE: On the Problem of the Effect of Forced Slip at the Sample Ends on Plastic Compression of Metals

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959, Nr 6, pp 171-172 (USSR)

ABSTRACT: The author and Savitskiy (Ref 1) have pointed out certain effects observed in plastic compression of metals when forced slip occurs at the plane ends of cylindrical samples. In the case of lead and tin such slip produces a more uniform deformation and lowers deforming stresses. Although temperature of the samples as a whole did not change during tests, the temperature of surface layers may have risen somewhat. Since both lead and tin melt at low temperatures, a small rise of temperature may have produced a marked change of properties in thin surface layers. To avoid the effect of such a temperature rise the author used technical copper in which a small rise of surface temperature at the ends of the samples should not affect its mechanical properties to any appreciable extent. Experiments were carried out using a special device

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On the Problem of the Effect of Forced Slip at the Sample Ends on Plastic Compression of Metals

mounted in a press P-5 in which the compressing plunger could be rotated at a constant rate of 20 rev/min. To avoid slipping of the lower end the cylindrical sample (8 mm diameter, 13 mm high) was placed on a plane velvet base fixed to the lower plate of the press. The upper end of the sample across which the compressing plunger slipped was smeared with a layer of vaseline oil. The normal load on the sample was increased from zero to 3500 kg. The stresses were calculated as before (Ref 1). Fig 1 gives the dependence of the true (σ) and contact (σ_K) stresses on the degree of deformation of the copper samples. This figure shows that the flow curves obtained with a rotating plunger lie below the curves obtained in the usual way (with a motionless plunger). It follows that the results in the case of copper are similar to those obtained earlier for lead and tin. Table 1 lists the temperature rise at the upper end and changes in dimensions of both ends of the sample. Although the temperature of the upper end of the sample rose, the bulk temperature and especially the temperature of the lower

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On the Problem of the Effect of Forced Slip at the Sample Ends on Plastic Compression of Metals

end remained considerably lower. Consequently temperature is not the cause of the larger increase of the diameter of the lower end when the upper end was subjected to forced slip. The fall of the true stress σ, which represents the bulk properties of the material, and the change in the diameter of the lower end when a rotating plunger is used at the upper end, both indicate that forced slip at the upper end produces changes in the bulk of the sample. The easier deformation and the lowering of the deforming stresses when forced slip occurs at the upper end of the sample are due to weakening of the effect of static friction between the sample and the upper plunger and due to redistribution of stresses because of change in the conditions of friction.

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There are 1 figure, 1 table and 2 Soviet references.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversitete imeni V.V. Kuybysheva
(Siberian Physico-Technical Institute at Tomsk State University imeni V.V. Kuybyshev)

SUBMITTED: March 18, 1959

ZAGREBELNIKOVA, M.P.; ILYUSHCHENKOV, M.A.; SUKHARINA, N.N.

Device for the compression testing of materials at temperatures below 0° C. Zav.lab. 25 no.10:1247-1248 '59. (MIRA 13:1)

1. Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut.
(Testing machines)

ZAGREBENYUK, S.D.

25(1,7) SOV/125-59-8-2/18

AUTHORS: Movchan, B.A., Rabkin, D.M., Gurevich, S.M., and Zagrebenyuk, S.D.

TITLE: Some Technological Features of Electron Beam Welding in a Vacuum

PERIODICAL: Avtomaticheskaya svarka, 1959, Nr 8, pp 12-17 (USSR)

ABSTRACT: This article describes an apparatus for electron beam welding in a vacuum developed at the Institut elektrosvarki imeni Ye.O. Patona (Institute of Electric Welding imeni Ye.O. Paton), and work done to determine the relation between parameters of the welding process and characteristics of the melt obtained. The authors first describe the IES-L1 laboratory device for electron beam welding in a vacuum, consisting of: 1) a vacuum chamber with rotating table and an external drive; 2) a vacuum system using a VN-461M lamellate-stator pump, a high-vacuum steam-oil pump TsVL-100, and type VIT-1 vacuum gauge; 3) electrical equipment consisting of step-up and filament transformers from a GKT-250 X-ray apparatus, a KRM-150 kenotron, LATR

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autotransformers, and control and measuring equipment. Construction and outfitting of the vacuum chamber is described in some detail. The half-wave kenotron rectifier is rated at a consumed power of up tp 1 kw. Voltage during welding can be varied in limits up to 10-15 kV; this range is below that at which X-ray radiation becomes a problem. Welding current up to 150 ma is available. Vacuum is no less than 2×10^{-4} mm of Hg. In the experimental chamber circular, junction, and over-lapping seams can be made. Welding speed is smoothly regulated from 2-28 m/hr. During experiments to determine the influence of the parameters of the process of electron beam welding in a vacuum on the melting of the basic metal, the relation between the depth and width of the weld and the amount of electron current, anode voltage (that between the cathode and welded object), welding speed and position of the cathode in relation to the plates being welded was studied. The basic metal used in the experiments was industrial titanium VT1. Fusing was

performed on a plate 5-6 mm thick under various welding conditions. Basic parameters of the process are given. Computation of the required degree of rarefaction in the chamber is outlined. A higher than usual vacuum - 2×10^{-4} mm of Hg - was used in these experiments to assure quality results. It is stated that at pressures higher than 3×10^{-3} mm of Hg the electronic process can easily become an ionic one. Results of the experiment are illustrated (Figs 5-8) and briefly outlined. It was established that an increase in current causes a noticeable increase in the depth and width of the weld. Voltage also has a significant influence on the melt of the basic metal. In contrast to electric arc welding, a voltage increase substantially increases the depth of the weld. The width and depth of the melt can also be controlled by varying the welding speed.

SOV/125-59-8-2/18

Some Technological Features of Electron Beam Welding in a Vacuum

There are 1 photograph, 1 schematic diagram, 2 structural diagrams, 4 graphs and 3 references, 1 of which is Soviet and 2 English.

ASSOCIATION: Ordena trudovogo krasnogo znameni - Institut elektrosvarki imeni Ye.O. Patona (Order of the Red Banner of Labor - Institute of Electric Welding imeni Ye.O. Paton) AN USSR (AS Ukr SSR)

SUBMITTED: May 14, 1959

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ZAGREBENYUK, S.D.

PHASE I BOOK EXPLOITATION SOV/5078

Akademiya nauk URSR, Kiyev. Instytut elektrozvaryuvannya

Vnedreniye novykh sposobov svarki v promyshlennost'; sbornik statey. vyp. 3. (Introduction of New Welding Methods in Industry; Collection of Articles. v. 3) Kiyev, Gos. izd-vo tekhn. lit-ry UkrSSR, 1960. 207 p. 5,000 copies printed.

Sponsoring Agency: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki imeni akademika Ye. O. Patona Akademii nauk Ukrainskoy SSR.

Ed.: M. Pisarenko; Tech. Ed.: S. Matusevich.

PURPOSE: This collection of articles is intended for personnel in the welding industry.

COVERAGE: The articles deal with the combined experiences of the Institut elektrosvarki imeni Ye. O. Patona (Electric Welding Institute imeni Ye. O. Paton) and several industrial enterprises in solving scientific and engineering problems in welding technology. Problems in the application of new methods of mechanized welding and electroslag welding in industry are discussed. This is the third collection of articles published under the same title. The Foreword was written by B. Ye. Paton, Academician of the Academy of Sciences Ukrainian SSR and Lenin prize winner. There are no references.

TABLE OF CONTENTS:

(15)

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S/125/61/000/007/009/013
D040/D113

1.2300

AUTHORS: Gurevich, S.M. and Zagrebenyuk, S.D.

TITLE: Semiautomatic submerged arc welding of titanium

PERIODICAL: Avtomaticheskaya svarka, no. 7, 1961, 82-85

TEXT: A new semiautomatic А-732 (A-732) pistol-type welder for titanium, designed by V.S.Kobylyakov, Engineer, and developed at the Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O.Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O.Paton AN UkrSSR) is described. High-quality joints in spots inaccessible to automatic welding machines can be reached by the A-732 welder. Up to now, the welding in such spots had to be done manually with tungsten electrodes in argon, and the quality of welds was low (cold cracks, porosity). The new welder uses thin titanium wire. The simple ПШ-5 (PSh-5) wire feed mechanism has been coupled with a d.c. motor permitting smooth speed regulation. The hose is fitted with a wear-resistant spring bronze spiral which produces little resistance to the passage of the titanium wire. The welder is fitted with replaceable spirals for feeding wire of up to 3 mm in diameter. Current is supplied from a standard ПС-300 (PS-300) or ПС-500 (PS-500) welding generator. Ar. АН-Т1

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Semiautomatic submerged arc welding ....

(AN-T1) flux was used in welding tests. Some details of the welding process are given (Table 1):

Type of joint	Electrode wire feed in m/hr	Welding current in amp	Tension in volts	Electrode throat in mm
Bilateral butt weld in 6-8 mm thick metal	162-189	200-250	32-34	14-16
Lap weld in 6-8 mm thick metal....	215	250-280	32-34	14-16
Angle butt weld, 8 x 8 mm cross section	230	280-300	34-36	14-16

The electrode wire was composed of commercial BT1-2 (VT1-2) titanium and OT4 (OT4) low-alloy titanium. The obtained welds were fully sound, and the hardness of weld and base metal differed very little, which proves the absence of contamination in the welds. The composition of the AN-T1 flux is

Semiautomatic submerged arc welding....

not given. The following conclusions are drawn: 1) Semiautomatic submerged arc welding of titanium in an oxygen-free AN-T1 flux is possible. The mechanical properties of welds produced by the A-732 welder are practically equal to the properties of welds produced by an automatic welding machine. 2) The new A-732 semiautomatic welder has successfully passed laboratory tests and can be recommended for industrial testing. There are 2 tables, 1 figure and 3 Soviet-bloc references.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.O.Patona AN USSR (Electric Welding Institute "Order of the Red Banner of Labor" im. Ye.O. Paton AN UkrSSR)

SUBMITTED: March 9, 1961

ACCESSION NR: AP4029260 S/0125/64/000/004/0093/0094

AUTHOR: Gurevich, S. M. (Doctor of technical sciences); Zamkov, V. N. (Engineer); Zagrebenyuk, S. D. (Engineer); Kushnirenko, N. A. (Engineer)

TITLE: Effect of rare-earth-bearing fluxes on the structure and characteristics of VT15-alloy welds

SOURCE: Avtomaticheskaya svarka, no. 4, 1964, 93-94

TOPIC TAGS: welding, titanium alloy, titanium alloy welding, welding flux, lanthanum fluoride flux, AN-T7 flux, VT17 welding wire, VT15 titanium alloy

ABSTRACT: It was found that lanthanum fluoride, as a part of the welding flux, is conducive to good weld formation, welding-process stability, slag-crust separation, etc. in welding important constructions made from titanium alloys. Experiments were conducted with fluxes that contained various proportions of LaF_3; AN-T7 refractory fused flux was taken as a basis. The oxygen content in a weld made by

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ACCESSION NR: AP4029260

VT17 wire (VT15 base metal) was 0.17% and 0.10% with 0 and 40% LaF_3 in the flux, respectively. A weld obtained with an optimum content of LaF_3 also showed superior mechanical characteristics (table given). Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 27Apr64 ENCL: 00

SUB CODE: ML NO REF SOV: 000 OTHER: 000

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S/0125/64/000/007/0044/0049

ACCESSION NR: AP4041861

AUTHOR: Zagrebenyuk, S. D. (Engineer)

TITLE: Submerged twin-arc welding of thick titanium sheets

SOURCE: Avtomaticheskaya svarka, no. 7, 1964, 44-49

TOPIC TAGS: titanium alloy plate welding, submerged twin arc welding, submerged arc welding, weld metal strength, weld metal ductility, titanium welding, titanium spot welding

ABSTRACT: A method of submerged twin-arc butt welding of titanium plate 20—25 mm thick, by forming a common molten pool by two electrodes displaced relative to each other, has been developed. Best results were obtained when the arc of the second electrode was located immediately behind the crystallization front of the molten pool formed by the first electrode. The best location for the second electrode (see Fig. 1 of the Enclosure) is determined from the formula

$$l = \frac{a+d_0}{2} + a_1$$

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ACCESSION NR: AP4041861

where s is the width of the molten pool formed by the first electrode and d is the second electrode wire diameter. The weld width can be controlled by changing the relative positions of the electrodes. Butt welding of plates 20—25 mm thick is done in 3—4 passes; for thicker plates, 4 passes are preferred. A stable arc and a satisfactory weld shape are obtained with electrode wire 2.5, 3, 4, and 5 mm in diameter using a current of 620, 650, 850, and 950 amp, respectively. Mechanical tests of submerged twin arc-butt welded AT3, 3, and OTCh-2 titanium alloys [OTCh-2 appears to be a misprint of OT4-2] showed the weld metal strength to be somewhat lower and the notch toughness and ductility higher than those of the parent metal. For example, the parent and the weld metal of 20-mm-thick plates of AT3 alloy (3% Al, 1.2—1.6% total Fe, Cr, Si, and B) had, respectively, a yield strength of 67.0—70.7 and 61.5—70.4 kg/mm^2, a tensile strength of 78.0—79.5 and 75.0—78.5 kg/mm^2, an elongation of 13.0—14.2 and 17.6—20.6%, a reduction of area of 36.0—38.6 and 33.0—51.0%, and a notch toughness of 5.0—8.4 and 5.0—5.5 kgm/cm^2. The corresponding figures for 25-mm-thick sheets of titanium alloy 3 [composition unspecified] were 67.5—70.4 and 60.4—63.0 kg/mm^2, 72.6—75.6 and 68.5—69.5 kg/mm^2, 16.8—22.6 and 16.6—21.4%, 38.1—41.2 and 28.0—36.0%, and 3.5—4.25 and 4.0—5.0 kgm/cm^2.

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ACCESSION NR: AP4041861

Twin-arc welding makes it possible to alloy the weld metal with two electrode wires simultaneously, thus imparting the required properties to the weld metal. The experimental work was conducted under the direction of S. M. Gurevich (Doctor of technical sciences). Orig. art. has: 6 figures and 1 table.

ASSOCIATION: Institut elektrosvarki im. Ye. O. Patona, AN UkrSSR (Electric Welding Institute, AN UkrSSR)

SUBMITTED: 19Oct63 ATD PRESS: 3066 ENCL: 01

SUB CODE: MM NO REF SOV: 008 OTHER: 000

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ACCESSION NR: AP4041861 ENCLOSURE: 01

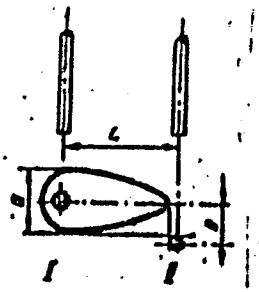

Fig. 1. Relative location of electrodes

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L 14564-66 EWT(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)/EWA(h) JD/BW

ACC NR: AP6002587 SOURCE CODE: UR/0286/65/000/023/0081/0081

INVENTOR: Gurevich, S. M.; Zamkov, V. N.; Zagrebenyuk, S. D.; Kushnirenko, I. A.

ORG: none

TITLE: Flux for welding light alloys such as titanium and its alloys. Class 49, No. 176789 [announced by the Electrical Welding Institute im.Ye. O. Paton AN UkrSSR (Institut electrosvarki AN UkrSSR)]

SOURCE: Byulleten' izobretenly i tovarnykh znakov, no. 23, 1965, 81

TOPIC TAGS: welding, submerged arc welding, light alloy welding, titanium welding, titanium alloy welding, welding flux

ABSTRACT: This Author Certificate introduces a flux for welding light alloys such as titanium and its alloys. To improve mechanical properties and reduce the oxygen content of weld metal, the flux is composed of 83—91% calcium fluoride, 1.5—2.5% sodium chloride, and 7—15% lithium fluoride. [ND]

SUB CODE: 13/ SUBM DATE: 25Jul64/ ATD PRESS: 4189

Card 1/1

ACC NR: AP6035710 (N) SOURCE CODE: UR/0413/66/000/019/0057/0057

INVENTOR: Zagrebnyuk, S. P.

ORG: none

TITLE: Method of improving weld quality. Class 21, No. 186582 [announced by the Electric Welding Institute im. Ye. O. Paton (Institut electrosvarki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 57

TOPIC TAGS: WELDING TECHNOLOGY, arc welding, weld EVALUATION

ABSTRACT: This Author Certificate introduces a method of improving the quality of automatic submerged-arc welds in highly active metals. To eliminate the air trapped between flux grains, a protective gas is blown through the flux hopper.

SUB CODE: 13/ SUBM DATE: 13Sep65/

Card 1/1 UDC: 621.791.753.5.9

GUREVICH, S.M.; ZAMKOV, V.N.; ZACHEPENYUK, S.D.; KUSHNIRENKO, N.A.

Effect of fluxes containing rare-earth elements, on the structure and properties of girth joints in the VT15 alloy. Avtom. svar. 17 no.4:93-94 Ap '64 (MIRA 18:1)

ZAGREBIN, D.V.

"Theory of a Regulated Geoid." Thesis for degree of Dr. Physicomathematical Sci. Sub 30 Nov 49 Geophysics Inst, Acad Sci USSR.

Summary 82, 18 Dec 52, Dissertations Presented For Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva, Jan-Dec 1949

30714. ZACREBIN, D. V.

Ob odnom reshenii problemy stoksa dlya sluchaya trekhosnogo ellipsoida i vyvod obobshchennoy formuly klero. Uchen. Zapiski (Leningr. gos. un-t. im. Zhdanova), Seriya matem. nauk, vyp. 18, 1949, s. 174-86. -- Bibliogr: 12 nazv.

30713. ZAGREBIN, D. V.

Normal'noye raspredelenie sily tyazhesti na ellipsoide Krasovskogo i na ellipsoidal'nom geoide s tremya neravnymi osyami. Uchen. Zapiski (Leningr. gos. un-t. im. Zhdanova), Seriya matem. nauk. vyp. 18, 1949, s. 187-91.

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One solution of the Stokes' problem for the case of a three-axial ellipsoid and the deduction of the generalized Clairault formula. Uch.zap.Len.un. no.116:174-186 '49. (MLRA 10:3)
(Ellipsoid)

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Normal distribution of gravity on the Krasovskii ellipsoid and on an ellipsoid geoid with three unequal axes. Uch.zap.Len.un. no.116:187-191 '49. (MLRA 10:3)
(Gravity) (Ellipsoid)

ZAGREBIN, D. V.

Moon - Tables

Computing the empirical term in compiling the lunar ephmeris. Biul. Inst. teor. astron. 5 (64) no. 1, 1951

9. Monthly List of Russian Accessions, Library of Congress, June 1952, ~~1953~~, Uncl.

ZAGREBIN, D. V.

"The Obtaining of Lunar Epheremerides by Analytic Computation Machines"

Byull Inst Teoret Astronomii AN SSSR Vol 5, No 8, 53, pp 546-559

Abstract

W-31098, 26 Nov 54

1. ZAGREBIN, D. V.

2. USSR (600)

4. Astronomy - Yearbooks

7. Meeting devoted to the astronomy yearbook of the U. S. S. R. Vest. AN SSSR 23, no. 2, 1953.

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