VINOGRADOV, V.S., inzh.; AL'TSHULER, M.A., kand. tekhn. nauk; POLYAKOV, V.G., inzh.; KUROCHKIN, A.N., inzh.; KARMAZIN, V.I., doktor tekhn. nauk; ZAIKIN, S.A., inzh.; OSTROVSKIY, G.P., inzh.[deceased]; NAUMENKO, P.I., inzh.; BOBRUSHKIN, L.G., inzh.; RUSTAMOV, I.I., inzh.; SHIFRIN, I.I., inzh.; GOLOVANOV, G.A., inzh.; KRASOVSKIY, L.A., inzh.; TSIMBALENKO, L.N., inzh.; RAVIKOVICH, I.M., inzh.; BAZILEVICH, S.V., kand. tekhn.nauk; ZORIN, I.P., inzh.; ZUBAREV, S.N., inzh.; TIKHOVIDOV, A.F., inzh.; SHITOV, I.S., inzh.; GAMAYUROV, A.I., inzh.; KUSEMBAYEV, Kh.N., inzh.; DEKHTYAREV, S.I., inzh.; VORONOV, I.S., inzh.; BURMIN, G.M., inzh.; BARYSHEV, V.M., inzh.; GOLOVIN, Yu.P., inzh.; MARCHENKO, K.F., inzh.; RYCHKOV, L.F., inzh.; NESTERENKO, A.M., inzh.; KABANOV, V.F., inzh.; PATRIKEYEV, N.N., inzh.[deceased]; ROSSMIT, A.F., inzh.; SOSEDOV, O.O., inzh.; POKROVSKIY, M.A., inzh., retsenzent: POLOTSK, S.M., red.; GOL'DIN, Ya.A., glav. red.; GOLUBYATNIKOVA,G.S., red. izd-va; BOLDYREVA, Z.A., tekhn. red.

[Iron mining and ore dressing industry]Zhelezorudnaia promyshlennost'. Moskva, Gosgortekhizdat, 1962. 439 p.
(MIRA 15:12)

1. Moscow. TSentral'nyy institut informatsii chernoy metallurgii.
(Iron mines and mining) (Ore dressing)

MUSTAFINA, A.M.; KUSEMBAYEV, Kh.N.

Selection of efficient dimensions for the working face of the ESh-6/60 excavator in the Sarbay Pit. Trudy Inst.gor.dela AN Kazakh.SSR 9:88-94 '62. (MIRA 15:8)
(Kustanay Province--Excavating machinery)

MUSTAFINA, A.M.; KUSEMBAYEV, Kh.N.; USOV, F.M.; SADYKOV, G.Kh.

Selection of the optimum parameters for the dump in using ESh-6/60 walker draglines in the Sarbay Mine. Trudy Inst. gor. dela AN Kazakh. SSSR 10:105-109 '63. (MIRA 16:8)

(Kustanay Province—Excavating machinery)

KUSEK', S.I. Can Biol. Sci -- (diss) "Indicators of Carbohydrophosphorous Metabolism in the Liver of ~~horse~~ Cattle". L'vov, 1957, 16 pp (Ministry of ~~Regional~~ Agriculture of USSR. L'vov Zoo-vet Inst). 100 copies (KL, 10-58, 130).

Kusen', S.Y.

21-4-24/24

AUTHORS: Gzhyts'kyy, S.Z., Corresponding Member of the Ukrainian Academy of Sciences, and Kusen', S.Y.

TITLE: Investigation of the Glycogen Level in the Cow Liver (Doslidzhennya rivnya hlikohenu pechinky u koriv)

PERIODICAL: Dopovidi Akademii Nauk Ukrains'koi RSR, 1957, #4, pp 413-416 (USSR)

ABSTRACT: Extensive investigations were conducted on determining the glycogen concentration in liver samples of cattle obtained by means of biopsy. The glycogen concentration fluctuates from 0.595 to 4.327 %, being higher in winter than in summer. Individual fluctuations were also observed.

Administering of glucose into the blood (as well as administering glucose preceded by an injection of insulin) results in a double effect: an increase of the liver glycogen concentration with a low initial level, and a decrease when the level was rather high.

The regulation of the blood sugar level in cattle is probably

Card 1/2

TITLE: Investigation of the Glycogen Level in the Cow Liver (Doslidzhennya rivnya hlikohenu pechinky u koriv) 21-4-24/24

due to the great capacity of the liver for synthesizing sugar from volatile fatty acids.

The article contains 2 tables.
There are 10 references, 2 of which are Slavic.

INSTITUTION: Institute of Agriculture and Livestock Raising of the Ukrainian Western Regions

PRESENTED BY:

SUBMITTED: 2 October 1956

AVAILABLE: At the Library of Congress

Card 2/2

OZHITSKIY, S.Z., professor; GOLOVACH, V.N., kandidat biologicheskikh nauk; PUPIN, I.G., kandidat biologicheskikh nauk; PALFIY, F.Yu., kandidat biologicheskikh nauk; KUSEN', S.I., aspirant.

Etiology of chronic hematuria in cattle. Veterinariia 34 no.5:44-46 My '57. (MIRA 10:6)

1. Chlen-korrespondent Akademii nauk Ukrainskoy SSR (for Ozhitskiy). 2. Institut zemledeliya i shivotnovodstva zapadnykh rayonov Ukrainskoy SSR, L'vov.

(Hematuria) (Cattle--Diseases and pests)

KUSEN', S. I.

SOV/21-58-2-27/28

AUTHORS: Gzhitskiy, S.Z., Corresponding Member of the AS UkrSSR, and Kusen', S.Y.

TITLE: ~~Methods of Liver~~ Biopsy in Cattle (Metodika biopsii pecheni krupnogo rogatogo skota)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1958, Nr 2, pp 228-229 (USSR)

ABSTRACT: Very little has been written about the application of biopsy to cattle. The reason for this has been the technical difficulty of obtaining pieces of an organ from live animals. Therefore an apparatus for performing biopsy was designed in a laboratory of the Scientific Research Institute of Agriculture and Cattle-Breeding in the Western Regions of the UkrSSR. The present article gives a description of this apparatus and of the method of its application for obtaining liver tissue from live cattle. The laboratory performed about 250 of these experiments, and liver samples were taken from some cows over ten times.
There are: 1 photo and 8 references, 2 of which are Soviet, 1 German, 2 American, and 3 English.

Card 1/2

Methods of Liver Biopsy in Cattle SOV/21-58-2-27/28

ASSOCIATION: Nauchno-issledovatel'skiy institut zemledeliya i zhivotnovodstva zapadnykh rayonov UkrSSR (Scientific Research Institute of Agriculture and Cattle-Breeding in the Western Regions of the UkrSSR)

SUBMITTED: April 8, 1957

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

Card 2/2

AUTHORS: Kusen', S.I. and Pupin, I.G. SOV-21-58-9-16/28

TITLE: On the Problem of Rhythmic Fluctuations of the Glycogen Content in the Liver of Cattle (K voprosu o ritmichnosti kolebaniy soderzhaniya glikogena v pecheni krupnogo rogatogo skota)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1958, Nr 9, pp 977 - 979 (USSR)

ABSTRACT: The authors present the results of investigations carried out on 13 cows from the L'vovskiy myasokombinat (L'vov Meat Combine). By means of biopsy, samples of liver tissue were taken 5 to 6 times, at 20-minute intervals, from each animal. In addition to this, liver samples were taken 4 times from 3 cows at one-minute intervals. The concentration of glycogen in the liver tissue was determined by the method of Good, Kramer and Somogyi [Ref. 6]. The results of these studies show that the glycogen concentration is constantly changing which confirms a previous hypothesis, by the authors and Soldatenkov [Ref. 4], as to rhythmicity in the exchange of carbohydrates in the liver of cattle. With some animals a 20-minute cycle of glycogen concentration fluctuations was observed, in others a 40-minute, and with still others, even a longer cycle. A transient form, when the 20-minute cycle alternates with a longer one, occurs most frequently. When

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On the Problem of Rhythmic Fluctuations of the Glycogen Content in the Liver of Cattle

SOV-21-58-9-16/26

the glycogen content was determined in various parts of the liver samples of the same animal, only insignificant differences were established, a fluctuation in the range from 10 to 140 mg%. There are 4 graphs, 1 table and 9 references, 4 of which are Soviet, 1 American, 2 English and 1 Scandinavian.

ASSOCIATION: Nauchno-issledovatel'skiy institut zemledeliya i zhivotnovodstva zapadnykh rayonov UkrSSR (Research Institute for Agriculture and Cattle-Breeding of the Western Regions of the UkrSSR)

PRESENTED: By Member of the UkrSSR, M.F. Gulyy

SUBMITTED: April 3, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration

1. Liver--Analysis 2. Liver--Performance 3. Glycogen--Determination

Card 2/2

PUPIN, I. G. and KUSEN, S. I. (USSR)

"Biochemical Processes in Rumen of Cattle."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 Aug 1961

RUSEN', S.I.; [illegible]

Phosphorus compounds in the bovine mammary gland. Ukr. biokhim. zhur. 35 no.1:72-83 '63 (MIRA 17:5)

1. Ukrainian Research Institute for the Physiology and Biochemistry of Domestic Animals, Pivn.

KUSEN', S.I.; PORODKO, I.S.; DORDA, V.Ya.

Arginase activity of the mucous membranes of the gastrointestinal tract wall in fetal and adult cattle. Dop. AN URSR no.5:617-620 '64. (MIRA 17:6)

1. Ukrainskiy nauchno-issledovatel'skiy institut fiziologii i biokhimii sel'skokhozyaystvennykh zhivotnykh. Predstavleno akademikom AN UkrSSR. M.F.Gulym [Hulyi, M.F.].

KUSEN', S.I.; PORODKO, I.S.; DORDA, V.Ye.

Arginase activity in the tissue of the liver of cattle fed on cobalt chloride. Dop. AN URSR no.7:950-952 '64. (MIRA 17:9)

1. Ukrainskiy nauchno-issledovatel'skiy institut fiziologii i biokhimii sel'skokhozyaystvennykh zhivotnykh. Predstavleno akademikom AN UkrSSR M.F.Gulyy [H lyi, M.F.].

KUSEN', S.I.; SHVETS, S.F. [Shvets', S.F.]

Phenols in precipitates obtained during the action of trichloroacetic acid on liver tissue and the digestive tract wall of adult cattle and fetuses. Dop. AN URSR no. 12:1625-1628 '64. (MIRA 18:1)

1. Ukrainskiy nauchno-issledovatel'skiy institut fiziologii biokhimii sel'skokhozyaystvennykh zhivotnykh. Predstavleno akademikom AN UkrSSR M.F.Gulym [Hulyi, M.F.].

KUSEN', S.I.; MASLYANKO, N.F.; KOTSYUBA, M.D.

On the chemical composition of fetal mammary glands in cattle.
Ukr. biokhim. zhur. 36 no.2:267-275 '64. (MIRA 17:11)

1. Ukrainian Research Institute for the Physiology and Biochemistry of Domestic Animals, Lvov.

KUSEN', S.I.; SHVETS, S.F. [Shvets', S.F.]

Concentration of conjugated phenol compounds in the tissues of the liver and the walls of the alimentary tract of fetuses and adult cattle. Ukr. biokhim. zhur. 36 no.5:756-766 '64.
(MIRA 18:6)

1. Ukrainskiy nauchno-issledovatel'skiy institut fiziologii i biokhimii sel'skokhozyaystvennykh zhivotnykh, L'vov.

KUSEN', S.I.; YANOVICH, V.G. [Ianovych, V.H.]

Content of lipids and ketone bodies in the liver, blood and urine of cattle as related to their age. Ukr. biokhim. zhur. 37 no.1:122-130 '65. (MIRA 18:5)

1. Ukrainian Research Institute of the Physiology and Biochemistry of Domestic Animals, L'vov.

KUSEN', S.I.; SOLOGUB, L.I. [Solohub, L.I.]

Content of carbohydrate-phosphorus metabolism products in the liver and blood of cattle as related to age. Ukr. biokhim. zhur. 37 no.3:437-446 '65. (MIRA 18:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut fiziologii i biokhimii sel'skokhozyaystvennykh zhivotnykh, L'vov.

KUSENKO, F.G.; GEL'D, P.V.

The thermochemistry of the Oxides and carbides of Nb.

report submitted for the 5th Physical Chemical Conference on Steel Production.

Moscow

30 JUN 1959

KUSENKO, F.G.; GEL'D, P.V.

Heat capacity and changes of the isothern-isobar potential during the formation of niobium dioxide. Trudy Ural. politekh. inst. no.92:121-124 '59. (MIRA 13:12)
(Niobium oxide--Thermal properties)

KUSENKO, F.G.; GEL'D, P.V.

Heats of formation of niobium oxides and carbides. Izv.Sib.otd. AN SSSR no.2:46-52 '60. (MIRA 13:6)

1. Ural'skiy filial AN SSSR.
(Niobium compounds) (Heat of formation)

69656

5.2200(T)
5.4700

S/180/60/000/02/012/028
E111/E135

AUTHORS: Gel'd, P.V., and Kusenko, F.G. (Sverdlovsk)

TITLE: Heat Content and Specific Heat of Niobium Oxides and Carbides at High Temperatures

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, Nr 2, pp 79-86 (USSR) (+1 plate)

ABSTRACT: The authors outline the present partly unsatisfactory position on the specific heats and heats of formation of substances involved in the increasingly important carbothermic process for the reduction of niobium oxides. Table 1 compares heat-of-formation values given by various workers (Refs 12-16), showing considerable differences. They go on to describe their own investigation of the heat contents of niobium oxides and carbides at 273 to 1840 °K. The niobium pentoxide used for preparation was purified by fractional precipitation and vacuum heating. Lower oxides were prepared by vacuum heating of briquettes made of this with niobium, finally at 1800 °C. Chemical compositions were determined as described by Gurevich and Ormont (Ref 19) for V - C - O; phase compositions by X-ray diffraction with a type RKD

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Heat Content and Specific Heat of Niobium Oxides and Carbides at High Temperatures

camera. For temperatures up to 1500 °K the classical method of mixtures was used, the apparatus and differential method being as described by Serebrennikov and Gel'd (Ref 21), with 12-g samples, carefully degassed, sealed in a Pt - 10% Rh capsule. Experimental errors are estimated as not exceeding 0.8-1.0%. For determinations at 1500-1840 °K a vacuum high-temperature calorimeter was used, the thermal equivalents of both calorimeters being determined electrically against the reliably known (Refs 22, 23) thermal capacity of corundum. Heat capacities of capsules were found in a special series of experiments. As previously (Ref 21) experiments at 0-25 °C were carried out to convert ΔH values to 298.16 °K. The heat contents for Nb_2O_5 are shown in Table 3. The authors represent their data which relate to the high-temperature modification, by

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$$\Delta H^T_{298.16} = 38.76\,T + 1.77 \cdot 10^{-3} T^2 + 7.318 \cdot 10^5 T^{-1} - 14162 \quad \text{(Eq 1)}$$

Heat Content and Specific Heat of Niobium Oxides and Carbides at High Temperatures

and compare (Fig 2) their results with those of Orr (Ref 18). The same Table gives the data for NbO_2; they are represented in Fig 3. The relation is

$$\Delta H^{T}_{298.16} = 14.681\ T + 3.078 \cdot 10^{-3} T^2 + 2.421 \cdot 10^{5} T^{-1} - 5460 \quad \text{(Eq 4)}$$

while above 1080 °K it is

$$\Delta H^{T}_{298.16} = -8060 + 21.28T \quad \text{(Eq 6)}$$

The results for NbO and Nb are shown in Table 4 and Fig 4. The relations are represented by, respectively,

$$\Delta H^{T}_{298.16} = 10.04T + 1.175 \cdot 10^{-3} T^2 + 0.783 \cdot 10^{5} T^{-1} - 3359 \quad \text{(Eq 8)}$$

and

$$\Delta H^{T}_{298.16} = 5.60T + 0.655 \cdot 10^{-3} T^2 - 1727 \quad \text{(10)}$$

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The latter relates to a sample with 0.5% by weight of dissolved and combined oxygen. For carbides the results

Heat Content and Specific Heat of Niobium Oxides and Carbides at High Temperatures

are shown in Tables 5 and 6 and Fig 5. The relationships are:

$$Nb\,C_{0.50}: \Delta H^{T}_{298.16} = 7.94T + 0.750\cdot10^{-3}T^2 + 1.025\cdot10^{5}T^{-1} - 2776 \quad (14)$$

$$Nb\,C_{0.749}: \Delta H_{298.16} = 8.95T + 1.127\cdot10^{-3}T^2 + 1.26\cdot10^{5}T^{-1} - 3190 \quad (16)$$

$$Nb\,C_{0.867}: \Delta H_{298.16} = 9.70T + 0.995\cdot10^{-3}T^2 + 1.51\cdot10^{5}T^{-1} - 3485 \quad (18)$$

$$Nb\,C_{1.00}: \Delta H^{T}_{298.16} = 10.79T + 0.863\cdot10^{-3}T^2 + 2.15\cdot10^{5}T^{-1} - 4013 \quad (20)$$

The authors point out that their data together with available data can be used for thermodynamic calculations on equilibria in the systems Nb - C - O and Nb - H - O and related ones.

Card 4/5

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S/180/60/000/02/012/028
E111/E135

Heat Content and Specific Heat of Niobium Oxides and Carbides at High Temperatures

There are 5 figures, 6 tables and 24 references, of which 12 are Soviet, 10 English and 2 German.

Card 5/5

SUBMITTED: November 30, 1959

KUSENKO, F.G

82440

S/149/60/000/004/003/009

5.2200

AUTHORS: Kusenko, F.G., Gel'd, P.V.

TITLE: On Some Properties of NbO_2

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, 1960, No. 4, pp. 102-106

4

TEXT: In a paper published recently on the heat capacity of NbO_2 within a temperature range of 298-1,500°K, the authors assumed that there was a phase transformation near 750°C. To check this assumption and to study the properties of NbO_2 near the temperature of the supposed transformation, the authors investigated the heat content, electric conductivity and thermal expansion of synthetic NbO_2 within 298-1,500°K. The NbO_2 compound was prepared from a briquetted mixture of purified niobium pentoxide and niobium metal powder, by annealing at 1,500°C in a tungsten vacuum furnace. The temperature dependence of the NbO_2 heat content was investigated by the differential mixing method. To protect the preparation from oxidation, it was placed in a platinum-rhodium alloy ampoule. The heat content of the empty ampoule and of one containing the sample was investigated in an adiabatic calorimeter. The temperature was measured by a potentiometer. Results of the experiments are shown in Graph 1. The temperature dependence of NbO_2 heat

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On Some Properties of NbO_2

content up to 1,010°K can be expressed by the Mayer-Kelly formula (1): $\Delta H_{298}^{T} = -5460 + 14.681\,T + 3.078 \cdot 10^{-3}T^{2} - 2.421 \cdot 10^{5}T^{-1}$. The temperature dependence of the NbO_2 heat capacity is described by formula (2): $C_p = 14.681 + 6.156 \cdot 10^{-3}T - 2.421 \cdot 10^{5}T^{-2}$. Above 1,080°K the heat content increases linearly with temperature up to 1,500°K. In the range of 1,010-1,080°K the heat content increases at an anomalously high rate, resembling temperature dependences of substances undergoing phase transformations of second order. The heat capacity increases rapidly but monotonously with raising temperature up to 1,010°K. It is constant over 1,080°K. Between 1,010 and 1,080°K a typical λ-point is observed. The data obtained indicate the possible phase transformation of NbO_2 near 750°C. To verify this, the temperature dependence of electric conductivity and thermal expansion of NbO_2 were studied. It was established that NbO_2 was a semiconductor whose energy gap changed from 0.66 ev at 298° - 715°K to 1.41 ev at 950°-1,050°K. The transformation of NbO_2 appears on a graph (3) where the curve $\sigma = \varphi(T)$ suffers an abrupt bend at 1,050°K. Dilatograms of two NbO_2 samples (Fig. 4) reveal clearly the changes in the temperature curves of expansion near 1,050°K. Consequently, the conclusion is drawn that NbO_2 undergoes a phase transformation near 1,040°K. There are 4 graphs and 9 references: 7 Soviet and 2 English.

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

SUBMITTED: September 18, 1959

Card 2/2

S/079/60/030/011/025/026
B001/B055

AUTHORS: Kusenko, F. G. and Gel'd, P. V.

TITLE: On the Heat of Formation of Niobium Pentoxide

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 11, pp. 3847-3848

TEXT: M. P. Morozova and L. L. Getskina, in their recently published report (Ref. 1), stated that the heat of formation of Nb_2O_5 from the elements is 472.5 kcal/mole. This value was obtained from the heat of formation of a preparation containing 98.5% Nb. At about the same time, the authors of the present publication studied the heats of formation of niobium oxides and niobium carbides (Ref. 2), using a metal which also contained 98.52% Nb. The heat of formation of Nb_2O_5 as determined by them, however, was 458.6 kcal/mole. The great difference between these two values (Refs. 1 and 2) induced the authors to carry out further calorimetric measurements using purer metal (99.01% Nb, 0.94% Ta, 0.04% O; no Ti, Fe, Si or C) which had been sintered close to its melting point. Two series

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of tests were carried out and the completeness of oxidation was checked after the tests. The mean values of the two test series were 99.33% and 99.10%. Corrections were made for incomplete oxidation and the Ta and O content of the initial product, assuming that tantalum is quantitatively transformed to Ta_2O_5 (499 kcal/mole, Ref. 3) and that the oxygen forms a solid solution in niobium with a heat of formation approximating that of the niobium oxide formed from the elements (Ref. 2). The calorimetric data and corrections are given in the table. From this it can be seen that the heat of formation of niobium pentoxide $\Delta M \approx -455.1 \pm 0.5$ kcal/mole, a result which is in agreement neither with the authors' previous results (Ref. 2) nor with those of G. L. Humpherey (Ref. 5). So far, no other exact studies on the present calorimetric question have been published, so that supplementary checking measurements will have to be carried out. There are 1 table and 5 references: 4 Soviet and 1 US.

ASSOCIATION: Institut khimii Ural'skogo filiala Akademii nauk SSSR (Ural Branch Institute of the Academy of Sciences USSR)

SUBMITTED: March 5, 1960

KUSENKO, F. G., Cand Tech Sci, "On the thermochemistry of the carbothermic reduction of niobium tetroxide." Sverdlovsk, 1961. (Min of Higher and Sec Spec Ed RSFSR, Ural Polytech Inst im S. M. Kirov). (KL, 3-61, 217).

S/137/62/000/004/001/201
A006/A101

5.2200

AUTHORS: Kusenko, F. G., Gel'd, P. V.

TITLE: On thermochemistry of niobium oxides and carbides

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 6, abstract 4A23 (V sb. "Fiz-khim. osnovy proiz-va stali", Moscow, AN SSSR, 1961, 41 - 51)

TEXT: The heats of formation of Nb oxides and carbides are determined by combustion in a cylinder; heat capacities are measured by the method of mixing in an adiabatic calorimeter (the substances were placed in hermetically soldered Pt-Rh-ampoules). Lower Nb oxides were prepared from Nb_2O_5 (0.001% Si, 0.001% Mg, 0.01% Fe, 0.001% Al, 0.01% Zn, 0.1% Ti, 0.001% Cu) and Nb metal (98.52% Nb, 0.3% Ta, 0.1% Ti, 0.05% C, 0.028% N and about 1% O). For the preparation of carbides acetylene carbon black was used. The following results were obtained: for Nb_2O_5 $\Delta H^\circ_{298} = -458.6 \pm 0.4$ kcal/mole; $C_p = 38.76 + 3.54 \cdot 10^{-3} T - 7.318 \cdot 10^5 T^{-2}$ cal/degree·mole (298 - 1,500°K); for NbO_2, $\Delta H^\circ_{298} = -191.7 \pm 0.4$, $C_p = 14.681 + 6.156 \cdot 10^{-3} T - 2.421 \cdot 10^5 T^{-2}$ (298 - 1,010°K), respectively. At about

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S/137/62/000/004/001/201
A006/A101

On thermochemistry of niobium oxides and carbides

1,040°K, NbO_2 is transformed, which is confirmed by measuring the electric conductivity and thermal expansion. The transformation heat $\Delta H_{1,040} = 0.69$ kcal/mole. In the 1,080 - 1,500°K range, the heat capacity of NbO_2 is constant and equal to 21.28 cal/degree·mole; for NbO $\Delta H^\circ_{298} = -97.7 + 0.5$ kcal/mole. The heats of formation of higher and lower Nb carbides within the ranges of homogeneity were equal to: for $NbC_{0.72-1.00}$ $\Delta H^\circ_{298} = -17.5$ kcal/g-atom (Nb + C) and for $NbC_{0.39-0.51}$ $\Delta H^\circ_{298} = -14.5$ kcal/g-atom (Nb + C). Heat capacities of carbides of three compositions within the 298 - 1,500°K range are expressed by equations (in cal/degree/mole): for $NbC_{0.964}$, $C_p = 12.10 + 3.273 \cdot 10^{-4}T - 3.472 \cdot 10^5 T^{-2}$; for $NbC_{0.867}$, $C_p = 11.24 + 7.184 \cdot 10^{-4}T - 3.429 \cdot 10^5 T^{-2}$ and for $NbC_{0.749}$, $C_p = 10.44 + 1.172 \cdot 10^{-3}T - 3.40 \cdot 10^5 T^{-2}$. The agreement of the empirical equations of heat capacity with experimental data is about ±1%.

Yu. Golutvin

[Abstracter's note: Complete translation]

Card 2/2

S/149/61/000/002/003/017
A006/A001

AUTHORS: Kusenko, F.G., Gel'd, P.V.

TITLE: On Equilibria in the Nb-C-O System

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, 1961, No. 2, pp. 43 - 52

TEXT: Among the methods of obtaining niobium metal, the carbothermic method is coming into extended use. Literature data on its thermodynamical substantiation (Ref. 1, 2) are only approximate and not based on reliable information as to the temperature of formation, heat capacities and standard entropies of a series of compounds of the Nb-C-O system. Only recently some authors (Ref. 3-12) have gathered new information on thermochemical characteristics of niobium oxides and carbides, permitting a more precise calculation for systems containing condensed phases of constant compostion. Equilibrium conditions in direct and indirect reduction of niobium pentoxide with carbon monoxide were studied. In indirect reduction reactions (1 - 4):

$$Nb_2O_5 + CO = 2NbO_2 + CO_2 \quad (1)$$

$$NbO_2 + CO = NbO + CO_2 \quad (2)$$

On Equilibria in the Nb-C-O System

$$NbO + CO = Nb + CO_2 \quad (3)$$

$$Nb_xO_y + CO = Nb_xO_{y-1} + CO_2 \quad (4)$$

are analyzed. Temperature relations for ΔZ_t^o and lgK_r are described by equations (I) $\Delta Z_r^o = A - BT$ and (II) $lgK_r = C - DT^{-1}$. In direct reduction the interactions of the gaseous phase not only with niobium oxides but also with carbon are considered; $C + CO_2 = 2CO$ (5). The indices of reactions of direct reduction are (6)-(8):

$$Nb_2O_5 + C = 2NbO_2 + CO \quad (6)$$

$$NbO_2 + C = NbO + CO \quad (7)$$

$$NbO + C = Nb + CO \quad (8)$$

To describe process (5) the following polynomials (Ref. 11) are employed: $\Delta Z_t = 40800 - 41.7\ T$; $lgK_r = 9.114 - 8918\ T^{-1}$. Values of ΔZ_t and lgK_r thus calculated are shown in Figures 3 and 4. Since reduction of niobium pentoxide develops as a rule stepwise with intermediate formation of NbO_2 and NbO, it is sufficient to analyze reactions with the participation of NbC, Nb_2C, Nb, NbO, C and CO. Indices of interaction with the participation of higher oxides and carbides can be found from characteristics of reactions 6,7,8 and from the reactions below (9-18)

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On Equilibria in the Nb-C-O System

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$$NbO + 1{,}5\,C = 0{,}5\,Nb_2C + CO \quad (9)$$

$$NbO + 2C = NbC + CO \quad (10)$$

$$NbO + Nb_2C = 3Nb + CO \quad (11)$$

$$NbO + NbC = 2Nb + CO \quad (12)$$

$$3NbC + NbO = 2Nb_2C + CO \quad (13)$$

$$NbC + 2NbO_2 = 3NbO + CO \quad (14)$$

$$2NbC + NbO_2 = NbO + CO + Nb_2C \quad (15)$$

$$NbC + Nb = Nb_2C \quad (16)$$

$$Nb + C = NbC \quad (17)$$

$$2Nb + C = Nb_2C \quad (18)$$

For these reactions the temperature dependences of ΔZ_i and $\lg K_p$ at 298 - 1800°K (Figure 3) can be described with sufficient accuracy (3 %) by polynomials I and II and given coefficients. As a result of the studies performed the authors draw the following conclusions: Carbothermic reduction of Nb_2O_5 to NbO_2 can, from the

Card 3/6

thermodynamical point of view, proceed at P = 1 atm and T > 1,240°K. The subsequent conversion of NbO_2 into NbO is possible at P = 1 atm and T > 1,650°K. The reduction of NbO to metal proceeds under less favorable conditions than processes entailing the formation of carbides. If the charge is calculated to obtain metal, then from the thermodynamical point of view, first higher carbide will be formed, which will gradually be oxidized to a lower carbide (or a solid solution) and metal. Indices of the last stage of the process are mainly determined by conditions of carbothermic reduction. This process at P = 1 atm is possible above 2,660°K. However, under conditions of a technical vacuum it can occur at t > 1,550°C. Considering the formation of solid solutions of oxygen and carbon in niobium (Ref. 18, 19) the necessity of higher temperatures and lower pressures is stressed. An analysis of equilibrium conditions in such cases is beyond the limits of the present study. Results of the calculations described are in a satisfactory agreement with technological and kinetic observations.

On Equilibria in the Nb-C-O System

S/149/61/000/002/003/017
A006/A001

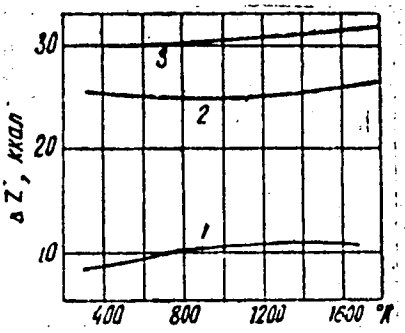

Figure 1:

The effect of temperature on changes of isothermal-isobaric potentials during the reduction of niobium oxides with carbon monoxide. The number of curves corresponds to the numbers of reactions.

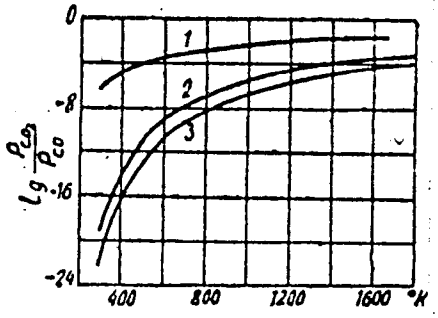

Figure 2:

Temperature dependences of equilibrium constants in reduction reactions of niobium oxides with carbon monoxide.

Card 5/6

On Equilibria in the Nb-C-O System

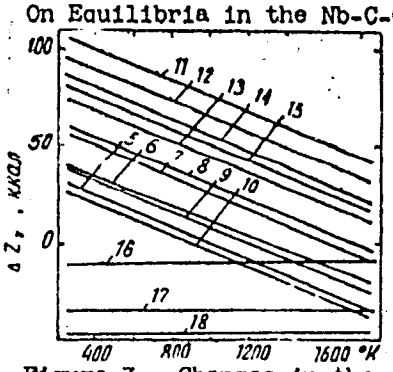

Figure 3: Changes in the isothermal-isobaric potentials of a series of processes in the Nb-C-O system

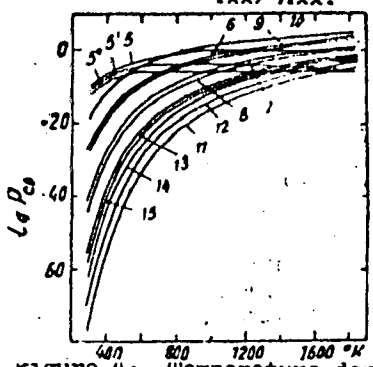

Figure 4: Temperature dependence of equilibrium constants in the Nb-C-O system

There are 3 tables, 4 figures and 19 references: 9 Soviet, 8 English and 1 German.

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

SUBMITTED: April 12, 1960

Card 6/6

PONIZOVSKIY, A.M., kand. khim. nauk, otv. red.; AKAV, N.I., red.; KUSENKO, Yu.M., red.; STAVROV, S.N., kand. khim. nauk, red.

[Problems in the overall processing of sea brine and the production of saline building materials] Voprosy kompleksnoi pererabotki rassolov morskogo tipa i polucheniia rapnykh stroitel'nykh materialov. Simferopol, Krymizdat, 1963. 151 p. (MIRA 17:12)

1. Akademiya budivnytstva i arkhitektury URSR. Instytut budivel'nykh materialiv i vyrobiv. Krymskyi filial.

TSIL'MAN, A.A.; KUSENOK, I.I.

Rare case of incapsulation of a parasite. Khirurgiia 35 no. 5:126-127 My '59. (MIRA 13:10)

1. Iz oblastnoy bol'nitsy (glavnyy vrach V.G. Val'ter) Birobidzhana i gorodskoy polikliniki No 1 (glavnyy vrach M.L. Peshekhod'ko).
(WORMS, INTESTINAL AND PARASITIC)

SUSTIC, Vladimir, dr.; KUSER, Josip, dr.; RIBARIC, Ljubomir, dr.

Emergency surgery in injuries of the abdomen and retroperitoneal space. Med. glasn. 15 no.7/8:319-332 Jl-Ag '61.

1. Kirurski odjel Opce bolnice "Brace dr Sobol" u Rijeci (Sef: doc. dr Ante Medanic).

(ABDOMEN wds & inj) (RETROPERITONEAL SPACE wds & inj)

KUSEV, G., inzh.; GROZEV, G., inzh.

Some peculiarities in the internal reboring and polishing of the L > 4000 mm. and D > 600 mm. long hydraulic cylinders.
Mashinostroene 12 no.1:26-27 Ja '63.

1. Zavod "Khr. Smirnenski", Sofiia.

NUSEV, Iordan (Narodnaya Respublika Bolgariya)

Stereophonic amplifier. Radio no.1:28-29 Ja '65. (MIRA 18:1)

L 18575-63 EWP(j)/EPF(c)/EWT(l)/EWP(q)/EWT(m)/BDS AFFTC/ASD/ESD-3/IJP(C)
Pc-4/Pr-4 JAJ/RM/WW/JD/MAY

ACCESSION NR: AP3001301 S/0181/63/005/006/1735/1737

AUTHORS: Belikova, G. S.; Kusev, V. G.; Fridkin, V. M.

TITLE: Nonlinear photodepolarization of crystals resulting from a space-charge-limited photocurrent

SOURCE: Fizika tverdogo tela, v. 5, no. 6, 1963, 1735-1737

TOPIC TAGS: photodepolarization, carrier, space charge, volt-ampere characteristic, photocurrent, drift, mobility, dielectric constant, injection, I, N, anthracene, corona discharge

ABSTRACT: This work is a continuation of earlier work on nonlinear photodepolarization produced by relatively large displacement of carriers. In the present work it is shown that the relative potential, V/V_0, depends on initial potential, V_0, in inverse fashion however, diminishing more rapidly as the value of V_0 rises. To test this conclusion, the authors investigated the photodepolarization of single crystals of anthracene on the surface of which positive ions of nitrogen have been adsorbed from corona discharge in air. The method has the advantage of excluding injection of carriers into the crystal. The technique

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L 18575-63

ACCESSION NR: AP3001301

2

has been described in detail in previous papers (V. M. Fridkin, Yu. N. Barulin, FTT, 4, 2982, 1962; DAN SSSR, 145, 1, 78, 1962). Measurements were made on a plate of anthracene with an area of about 2 cm^2 and a thickness of 0.3 cm, cut parallel to the (001) face. Depolarization of the crystal was effected by illumination in monochromatic light having a wave length of 405 mμ. Results show that V/V_0 declines more rapidly with increase in V_0 and that the relation deviates somewhat from that predicted by the theoretical derivation; i.e., the space-charge-limited photocurrent obeys the square law. The deviation in theoretical and experimental values may be explained by variations in degree of refinement of specimens or by the presence of shielded space charge, the radius of shielding being as great as the thickness of the crystal specimen. Tests made at different intensities of light show agreement with results of other authors. Orig. art. has: 2 figures and 5 formulas.

ASSOCIATION: Institut kristallografii AN SSSR, Moscow (Institute of Crystallography, Academy of Sciences, USSR); Institut fiziki Bolgarskoy Akademii nauk, Sofia (Institute of Physics, Bulgarian Academy of Sciences)

SUBMITTED: 01Feb63 DATE ACQ: 01Jul63 ENCL: 00

SUB CODE: PH NO REF SOV: 003 OTHER: 006

Card 2/2

KUSEVIC, RAJKO

Mathematical Reviews
Vol. 14 No.9
October 1953
Mechanics

8-10-54
LL

Kušević, Rajko. Solution of the three-term equations of elasticity by the method of undetermined coefficients. Rad Jugoslav. Akad. Znan. Umjet. Odjel Mat. Fiz. Tehn. Nauke 276, 83-99 (1949). (Serbo-Croatian)

Math
(L)
3

KUSEVIC, RAJKO

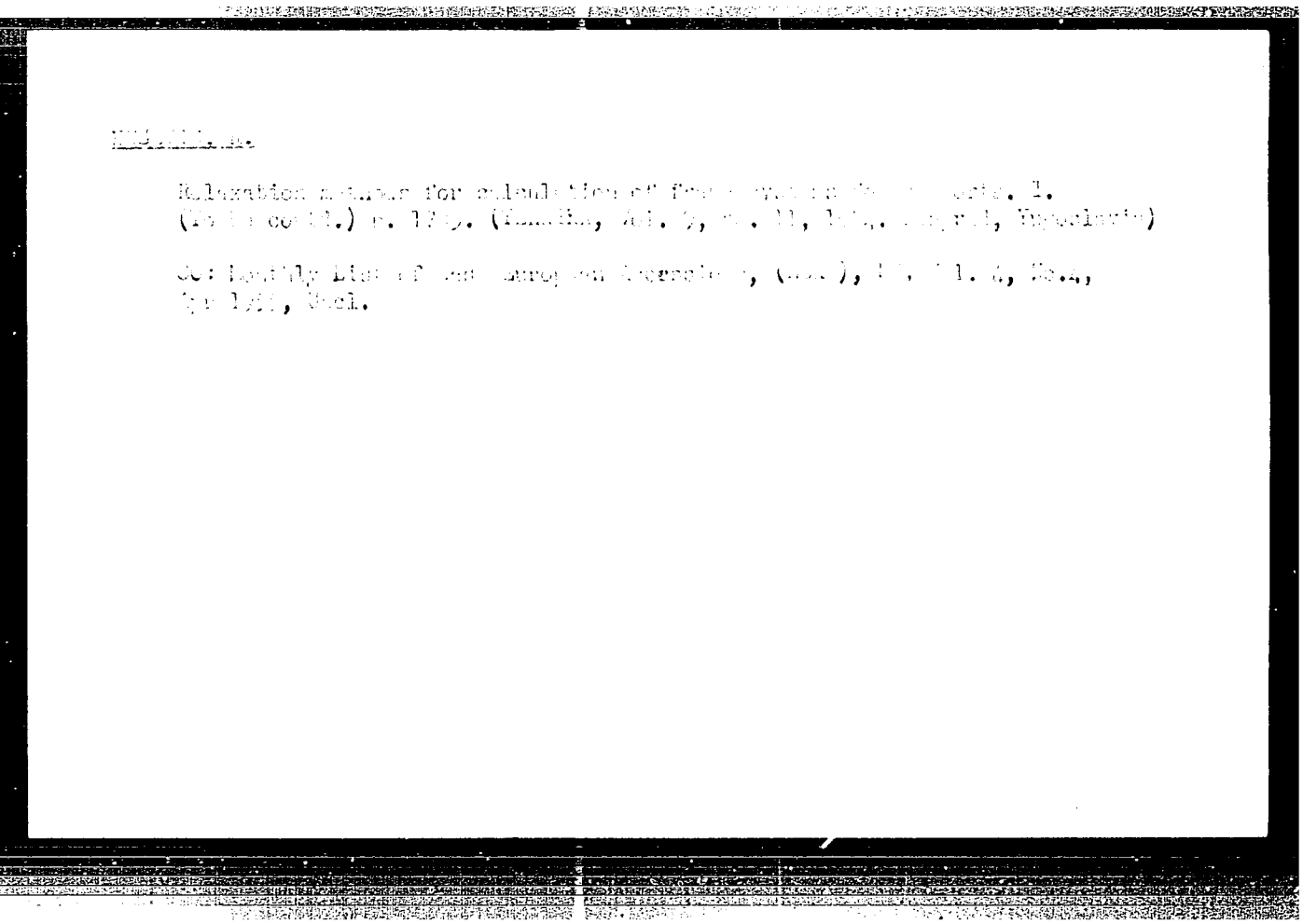
(2)

Mathematical Reviews
Vol. 14 No. 9
October 1953
Mechanics

Kušević, Rajko. Résolution des équations d'élasticité à trois termes par la méthode des coefficients indéterminés. Bull. Internat. Acad. Yougoslave. Cl. Sci. Math. Phys. Tech. (N.S.) 5, 25–31 (1952).
Abbreviated version of the paper listed above.

KUSEVIC, R., dr

"Manual for civil engineers" F. Slajher [Schleicher, F.]. Vols. 1-2. Reviewed by R. Kusevic. Gradevinar 13 no.11:367 N '61.



KUSEVIC, Rajko, prof., dr inz. (Zagreb)

Iterative solution of equations of the third order. Gradevinar 14 no.12:440-442 D '62.

1. Clan Redakcionog odbora, "Gradevinar".

KUŠEVIĆ, V.

The testing of leaves and tincture of Digitalis. Propositions for the Addendum of Yugoslavian Pharmacopeia. II. V. Kušević and M. Porges (Inst. Control Drugs, Zagreb). *Acta Pharm. Jugoslav.* 6, 183–41(1956).—Various samples of leaves and tincture of digitalis have been examd. The stability of the tincture was very poor, and the results varied widely. On the basis of results obtained, it was found that the validity period was 15–20 days, the loss on drying 5%, and ash content 15%. T. Hilgan-Filter

2

KUŠEVIĆ, V.

Med

Preparation of digitalis tincture. V. Kušević (Inst. contrôl Drugs, Zagreb, Yugoslavia). *Pharmazie* 12, 243-5 (1960).—The processes for the manuf. of digitalis tincture examd. were maceration during 10 days, percolation during 24 and 3 hrs., maceration during 24 hrs. and continuous stirring, maceration during 20 min. and continuous stirring, and digestion with dil. alc. at 60°. Digestion gives the best results.

F. Blau

PERRIC, J.; KUSEVIC, V.

Comparison of standard preparations of digitalis by means of paper chromatography. Acta med. Iugosl. 18 no.3:219-222 '64.

1. Institute for the Control of Drugs, Zagreb.

KUSEVIC, Vladimir, dr

Pharmaceutical packaging from the viewpoint of health [illegible] requirements. Farmaceut. gl. Zagreb 20 no.9:329-332 S '64.

1. Director, Institute for Testing and Control of Medicines of Croatia, Zagreb.

KUSEVITSKIY, I. A. Dr.Med. Sci.

"Frequency and Character of Tubercular Degeneration of the Bronchi in Various Forms of Pulmonary Tuberculosis," Prob. Tuber., No.3, 1948

Lab. Pulmonary Pathology, AMS USSR - Inst. Normal and Pathol. Morph.

POMEL'TSOV, K.V.; RABINOVA, A.Ya.; STRUKOV, A.I.; KUSEVITSKIY, I.A.

Roentgenographic and anatomical parallels in limited tuberculous affections of the lung. Probl. tuberk., Moskva No. 1:42-46 Jan-Feb 52.
(CIML 21:5)

1. Professor for Pomel'tsov; Candidate Medical Sciences for Rabinova; Corresponding Member of the Academy of Medical Sciences USSR, Professor for Strukov; Professor for Kusevitskiy. 2. Of the Moscow Oblast Scientific-Research Tuberculosis Institute (Director--Prof. F.V. Shebanov) and of the Institute of Morphology of the Academy of Medical Sciences USSR (Director--Academician A.I. Abrikosov).

POKHLEBKIN, K. V., Prof.; [illegible], I. [illegible], Prof.; [illegible], A. [illegible], Jr.

Tuberculosis

Clinico-roentgenological and anatomic findings in primary complex and in lymph node tuberculosis. Sov. med. 16, no. 9, 1952.

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

KUSEVITSKIY, I.A., prof.; GOLUBEV, N.A., zasluzhenyy vrach RSFSR

Pathogenesis and course of tuberculous abscess in osteoarticular tuberculosis [with summary in French]. Probl.tub. 36 no.1:102-108 '58. (MIRA 11:4)

1. Iz khirurgicheskogo otdeleniya sanatoriya "Krasnaya Roza" (zav. N.A.Golubev, glavnyy vrach L.V.Anisimov) Moskovskogo oblzdravotdela.
(TUBERCULOSIS, OSTEOARTICULAR, compl
tuberc. abscess, pathogen. & course (Rus))

KUSEVITSKIY, I.A., prof., RODIONOV, S.I., LYUTROVNIK, L.L.

Case of myelosclerosis in tuberculous spondylitis [with summary in French]. Probl.tub. 36 no.5:115-116 '58 (MIRA 11:8)

1. Iz sanatoriya "Krasnaya Roza" Mosoblzdravotdela (glavnyy vrach L.V. Anisimov).
(TUBERCULOSIS, SINAL, compl.
myelosclerosis (Rus))

KUSEVITSKIY, I.A., prof.

Some problems in the pathological anatomy of fivrous-cavernous tuberculosis of the lungs. Probl.tub. no.6:96-103 '61.
(MIRA 14:9)

1. Iz 13-go protivotuberkuleznogo dispansera (glavnyy vrach Ya.M. Gurtovoy) Leningradskogo rayonnogo otdela zdravookhraneniya i patologoanatomicheskogo otdeleniya (zav. B.P. Kesareva) bol'nitsy imeni Botkina.
(TUBERCULOSIS)

SHTENBERG, A.I.; KUSEVITSKIY, L.A.; ABOLYN', [illegible]

Effect of cobalt on the thyroid gland state caused by low-protein diet against a background of different iodine supply. Vop. pit. 22 no.3:41-47 My-Je '63. (MIRA 17:8)

1. Iz otdela gigiyeny pitaniya (zav. - prof. A.I. Shtenberg) Moskovskogo instituta gigiyeny imeni F.F. Erismana.

SHTENBERG, A.I.; KUSEVITSKIY, I.A.; Prinimala uchastiye GORYUNOVA, L.N., ordinator

Effect of predominant carbohydrate nutrition in iodine deficiency associated with some functional stresses on the development of experimental goiter. Vop. pit. 23 no.1:43-51 Ja-F '64. (MIRA 17:8)

1. Iz kafedry gigiyeny pitaniya Sverdlovskogo meditsinskogo instituta.

MESHALKIN, Ye.N., otv. red.; KUSEVITSKIY, I.A., red.

[Surgical pathology and anesthesia] Operatsionnaia patologiia i narkoz. Moskva, Nauka, 1965. 226 p.
(MIRA 18:9)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut eksperimental'noy biologii i meditsiny.

KUSEVITSKIY, I.A., prof.

Autopsy data on tubercular changes in patients with nontuberculous visceral diseases. Probl. tub. 42 no.8:74-77 '64.
(MIRA 18:12)

1. Patologoanatomicheskoye otdeleniye (zav. - prof. I.A.Kusevitskiy) 53-y gorodskoy bol'nitsy (glavnyy vrach S.G.Rinkevich), Moskva.

KUSEVSKI, Boris, inz.

Releasing brake valves. Tehnika Jug 19 no. 2:Suppl.:Saobracaj 11 no. 2:369-370 F '64.

JAKUBOWSKA, Jadwiga; KUSEWICZ, Danuta

Thiamine content in autolysates of wine- and beer-sediment yeasts.
Acta microbiol. pol. 11 no.4:363-372 '62.

1. Z Katedry Mikrobiologii Technicznej Politechniki Lodzkiej.
(YEASTS) (THIAMINE) (BEER) (WINE)

KUSKWICZ, Danuta

Vitamin B requirements of Schizosaccharomycees. Acta microbiol. Pol. 14 no.2:155-160 '65.

1. From the Department of Industrial Microbiology, Technical University, Lodz.

KUSEYEV, G.

Take care of military and public property. Voen. znan. 39 no.3:4-5 Mr '63. (MIRA 16:7)
(Socialist property)

Kush, I. K.

DUBININ, Aleksandr Iosifovich; FEDYAYEVA, N.A., redaktor; BEGICHEVA, M.N., tekhnicheskiy redaktor; KUSH, I.K.

[Loading cargoes onto seagoing vessels anchored offshore unprotected] Gruzovye raboty na otkrytykh reidakh. Moskva, Gos. izd-vo vodnogo transporta, 1954. 153 p. (MIRA 8:1)
(Ships) (Anchorage) (Loading and unloading)

YEVSEYEV, V.S.;KOMAROV, V.I.;KUSH, V.Z.; ROGANOV, V. [illegible]CHEVOGOROVA, V.A.; SHIMCHAK, M.M.

[Asymmetry in the angular distribution of neutrons emitted in the capture of μ^--mesons in calcium] Asimmetriia v uglovom raspredelenii neitronov, ispuskaemykh pri zakhvate μ^--mezonov v kal'tsii. Dubna, Ob"edinennyi in-t iadernykh issl., 1961. 27 p. (MIRA 14:11)

(Neutrons) (Mesons--Capture) (Calcium)

20685
S/120/61/000/001/020/062
E032/E314

26.2244

AUTHORS: Yevseyev, V.S., Komarov, V.I., Kush, V.Z., Roganov, V.S., Chernogorova, V.A. and Shimchak, M.M.

TITLE: A Multilayer Scintillation Detector for the Recording of Neutrons in the Presence of γ-rays

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No. 1, pp. 68 - 72

TEXT: A description is given of a neutron detector having a high sensitivity to neutrons but a low sensitivity to γ-rays. The detector is designed for the energy range 5-20 MeV. The detector is similar to that reported by Baker and Rubbia (Ref. 4). The multilayer detector is based on the difference between the ranges of protons and electrons of the same energy. The detector consists of a number of thin scintillators, each having a thickness h . The scintillators are separated by opaque partitions. The device is so arranged that scintillations from layers 1, 3, 5, etc. are recorded by one photomultiplier and scintillations from the remaining layers by another. If the energy of an electron is sufficient

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4

A Multilayer ....

for it to penetrate into a neighbouring layer, then coincident pulses will be produced in the two photomultipliers. The electronic circuitry employed is such that it rejects coincident pulses. Non-coincident pulses arising in either of the photomultipliers are analysed by a kicksorter. In this way, one can separate recoil protons from electrons due to γ-rays. The multilayer detector consists of 28 discs (diameter 80 mm, h = 4 mm). The discs are made from a plastic based on polystyrene with the addition of 2% p-terphenyl + 0.2% αNPO. The neighbouring discs are separated from each other by pieces of black paper, 0.05 mm thick. The detector consists of two identical parts placed in series. In each part, scintillations from "even" discs are collected through perspex light pipes by the corresponding to multipliers, whilst the scintillations from the "odd" discs are collected by two other photomultipliers. In order to prevent the light from the "even" discs from entering the photomultipliers belonging to the "odd" discs (and conversely), the side surfaces of the discs are separated into four equal parts and two (opposite) of these are covered

A Multilayer ....

by an aluminium foil. Altogether, the detector incorporates 8 photomultiplers of the type ФЭУ-[illegible] (FEU-29). Each photomultiplier was placed in a separate magnetic screen made of soft iron. The light guides were not in optical contact with the scintillators, which reduced the amplitude of the pulses but simplified the operation. Pulses from each photomultiplier group were amplified and equalised in amplitude. The maximum amplitude of Co^{60} γ-ray pulses was about 0.01 V. The pulses were then fed into an adding circuit and the pulses from the adding circuit and those from one of the photomultiplier groups were fed into a coincidence circuit and a discriminator, which were so arranged that coincident pulses were rejected while those which were not in coincidence were allowed to pass on into a kicksorter. Detailed tests carried out on this detector have shown that its sensitivity to γ-rays is lower by a factor of 2 and it sensitivity to neutrons is higher by a factor of 2, as compared with the detector reported by Baker and Rubbia in Ref. 4. It is said that this is due to the fact that the thickness of each scintillator in the present instrument is

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lower by a factor of 1.2 while the total thickness of the device is smaller by a factor of 2.7 as compared with Ref. 4. There are 6 figures and 6 references: 2 Soviet and 4 non-Soviet.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Institute for Nuclear Research)

SUBMITTED: February 5, 1960

YEVSEYEV, V.S.; KOMAROV, V.I.; KUSH, V.Z.; ROGANOV, V.S.; CHERNOGOROVA, V.A.; SHIMCHAK, M.M.

Asymmetry of the angular distribution of neutrons emitted in the capture of μ^- -mesons in calcium. Zhur.eksp.i teor.fiz. 41 no.1:306-307 Jl '61. (MIRA 14:7)

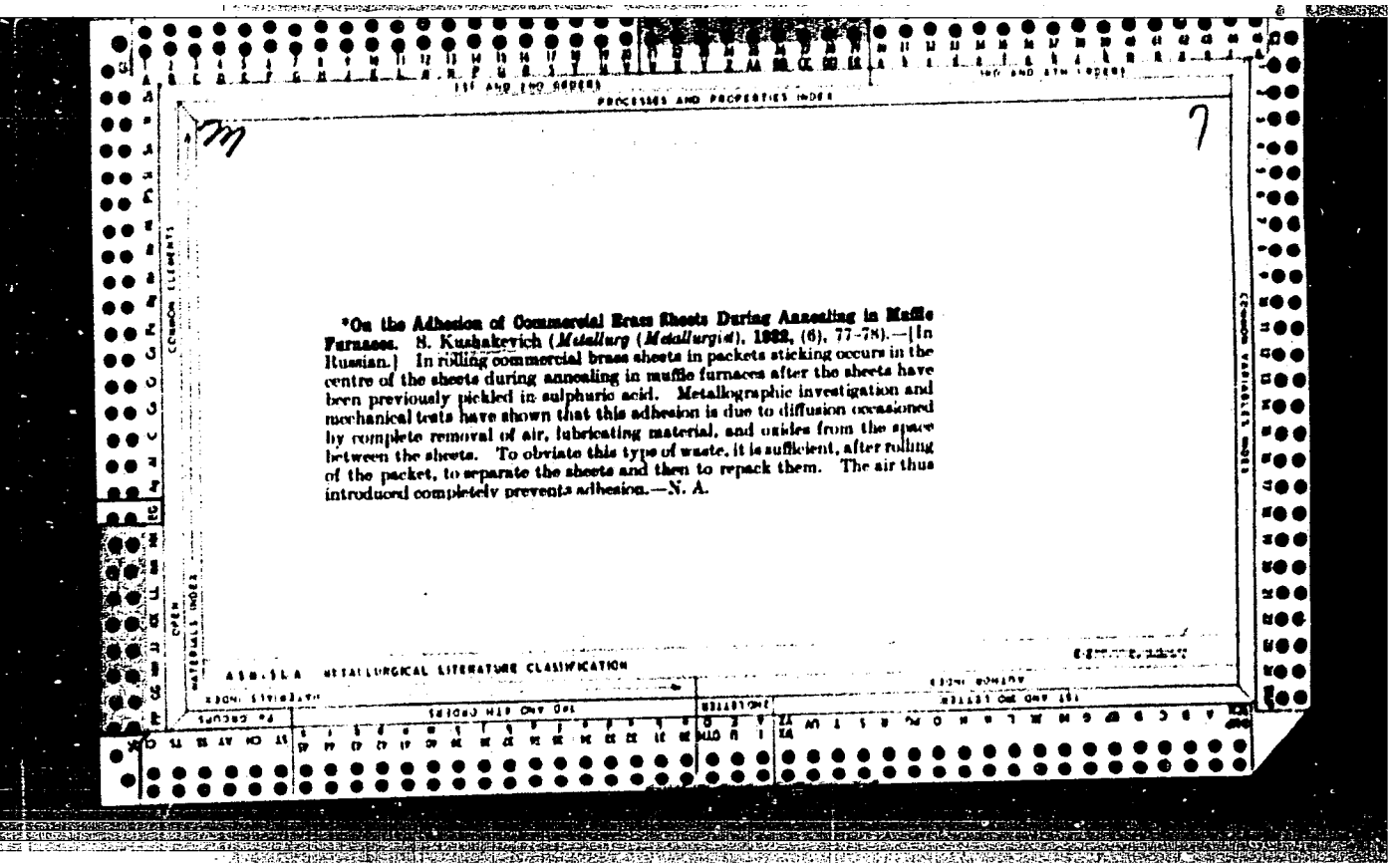
1. Ob"yedinennyy institut yadernykh issledovaniy.
(Mesons—Capture) (Neutrons—Scattering)

KUSHNIR, V...

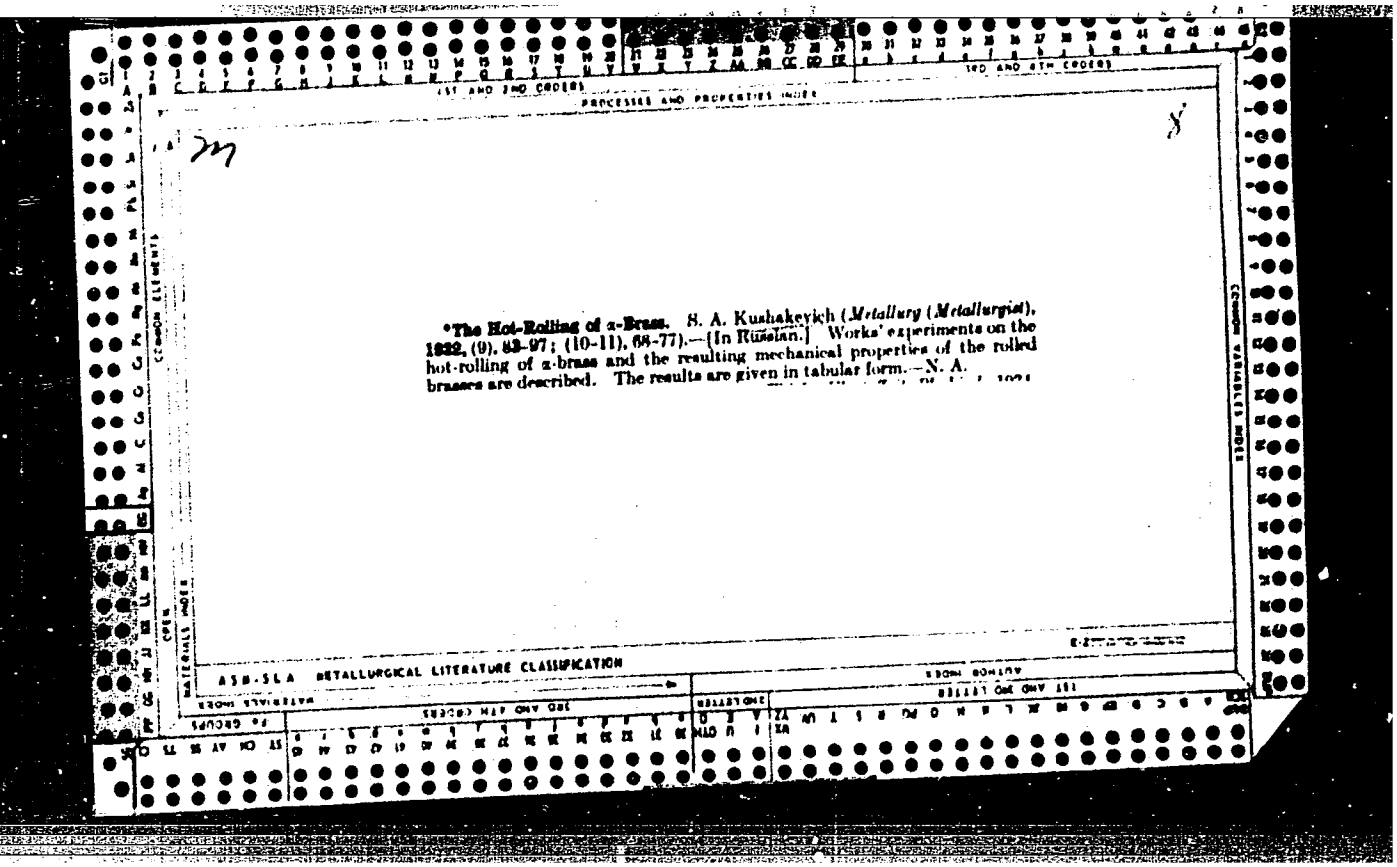
What we expect from agricultural [illegible]. Mekh.sil'.proiz. 10 no.6:13 My '59. (MIRA 12:9)

1. Upravlyayushchiy kolkhozom "Ukraina," Ivanovo-Frankovskogo, Volynskoy oblasti.

(Agricultural [illegible])

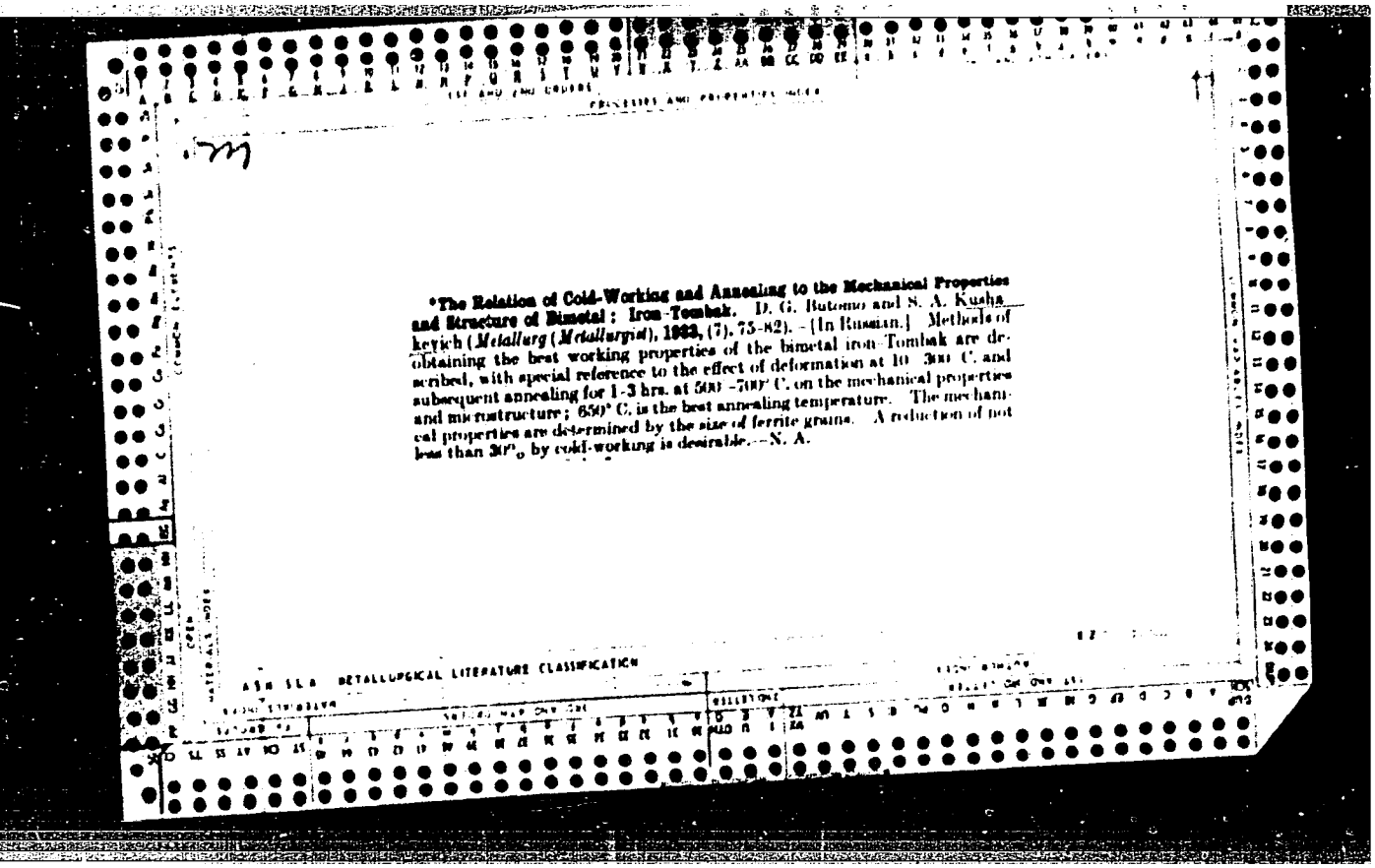


***On the Adhesion of Commercial Brass Sheets During Annealing in Muffle Furnaces.** S. Kushakevich (*Metallurg* (*Metallurgist*), **1932**, (6), 77–78).—[In Russian.] In rolling commercial brass sheets in packets sticking occurs in the centre of the sheets during annealing in muffle furnaces after the sheets have been previously pickled in sulphuric acid. Metallographic investigation and mechanical tests have shown that this adhesion is due to diffusion occasioned by complete removal of air, lubricating material, and oxides from the space between the sheets. To obviate this type of waste, it is sufficient, after rolling of the packet, to separate the sheets and then to repack them. The air thus introduced completely prevents adhesion.—N. A.



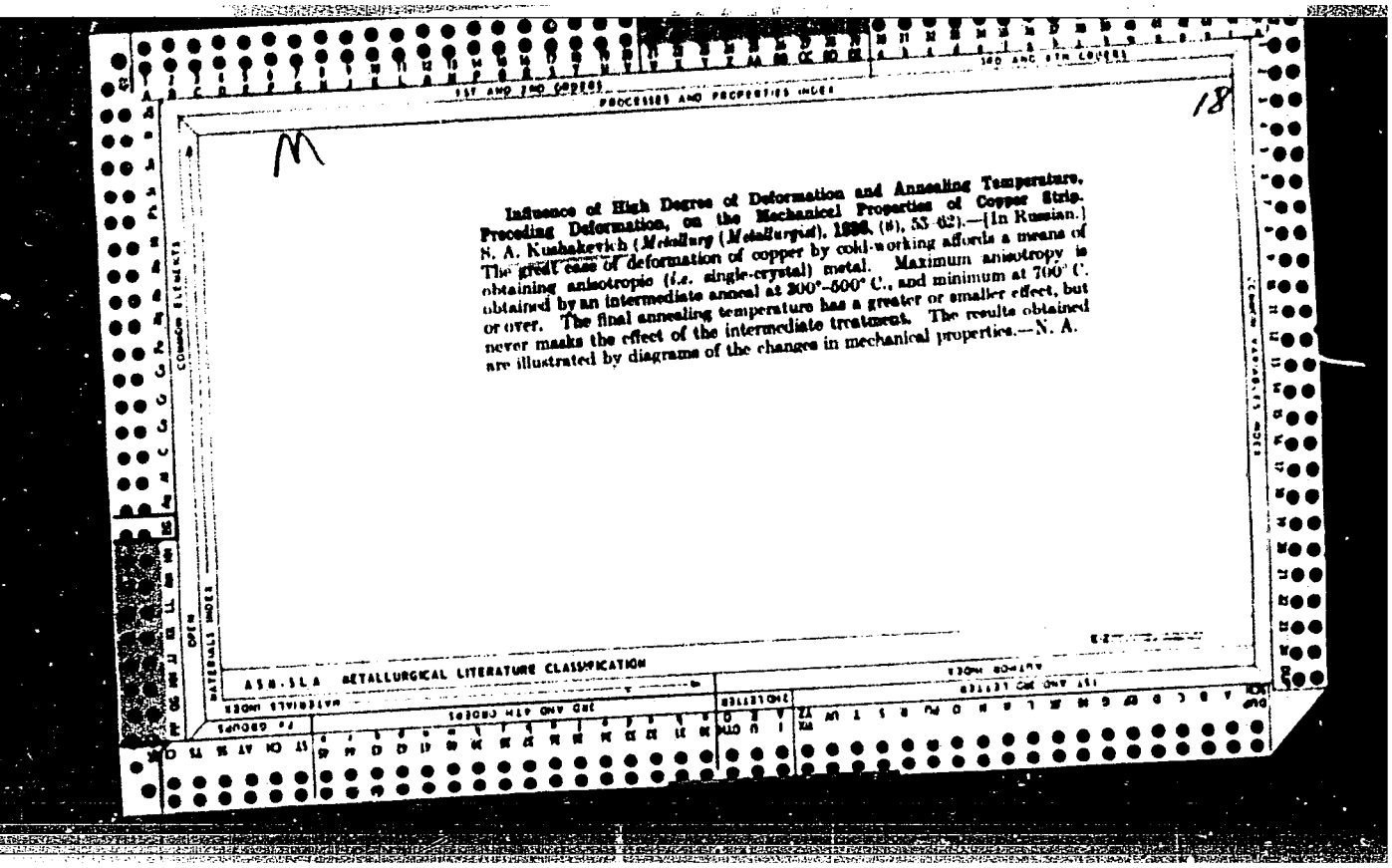
***The Hot-Rolling of α-Brass.** S. A. Kushakevich (*Metallurg* (*Metallurgist*), 1932, (9), 83-97; (10-11), 68-77).—[In Russian.] Works' experiments on the hot-rolling of α-brass and the resulting mechanical properties of the rolled brasses are described. The results are given in tabular form.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



"The Relation of Cold-Working and Annealing to the Mechanical Properties and Structure of Bimetal: Iron-Tombak. D. G. Butenko and S. A. Kusha-keyich (*Metallurg* (*Metallurgist*), **1933**, (7), 75-82). - [In Russian.] Methods of obtaining the best working properties of the bimetal iron-Tombak are described, with special reference to the effect of deformation at 10 - 300° C. and subsequent annealing for 1-3 hrs. at 500 - 700° C. on the mechanical properties and microstructure; 650° C. is the best annealing temperature. The mechanical properties are determined by the size of ferrite grains. A reduction of not less than 30% by cold-working is desirable.—N. A.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

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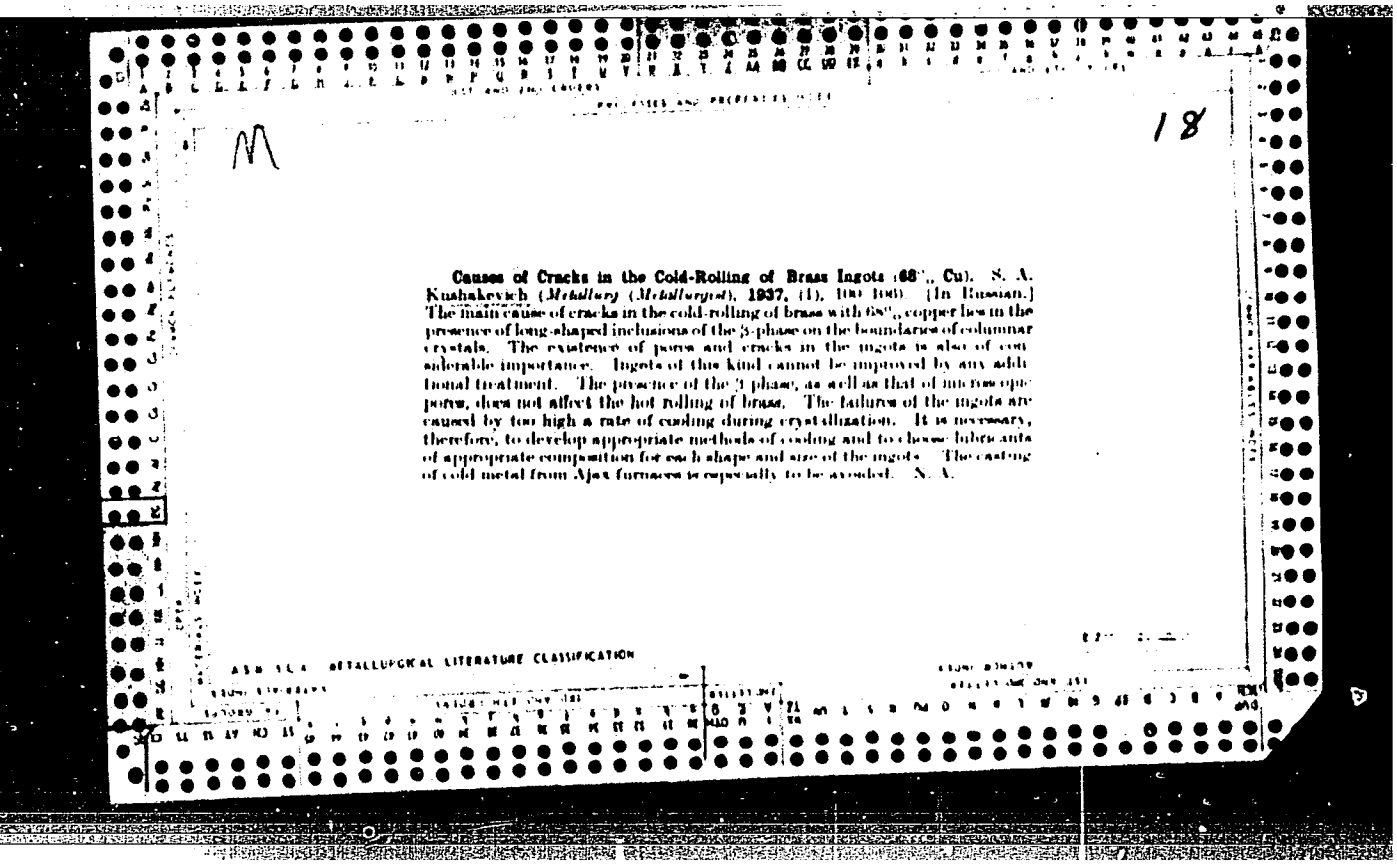
M

Influence of High Degree of Deformation and Annealing Temperature, Preceding Deformation, on the Mechanical Properties of Copper Strip. S. A. Kushakevich (*Metallurg* (*Metallurgist*), **1936**, (8), 53–62).—[In Russian.] The great case of deformation of copper by cold-working affords a means of obtaining anisotropic (*i.e.* single-crystal) metal. Maximum anisotropy is obtained by an intermediate anneal at 300°–500° C., and minimum at 700° C. or over. The final annealing temperature has a greater or smaller effect, but never masks the effect of the intermediate treatment. The results obtained are illustrated by diagrams of the changes in mechanical properties.—N. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

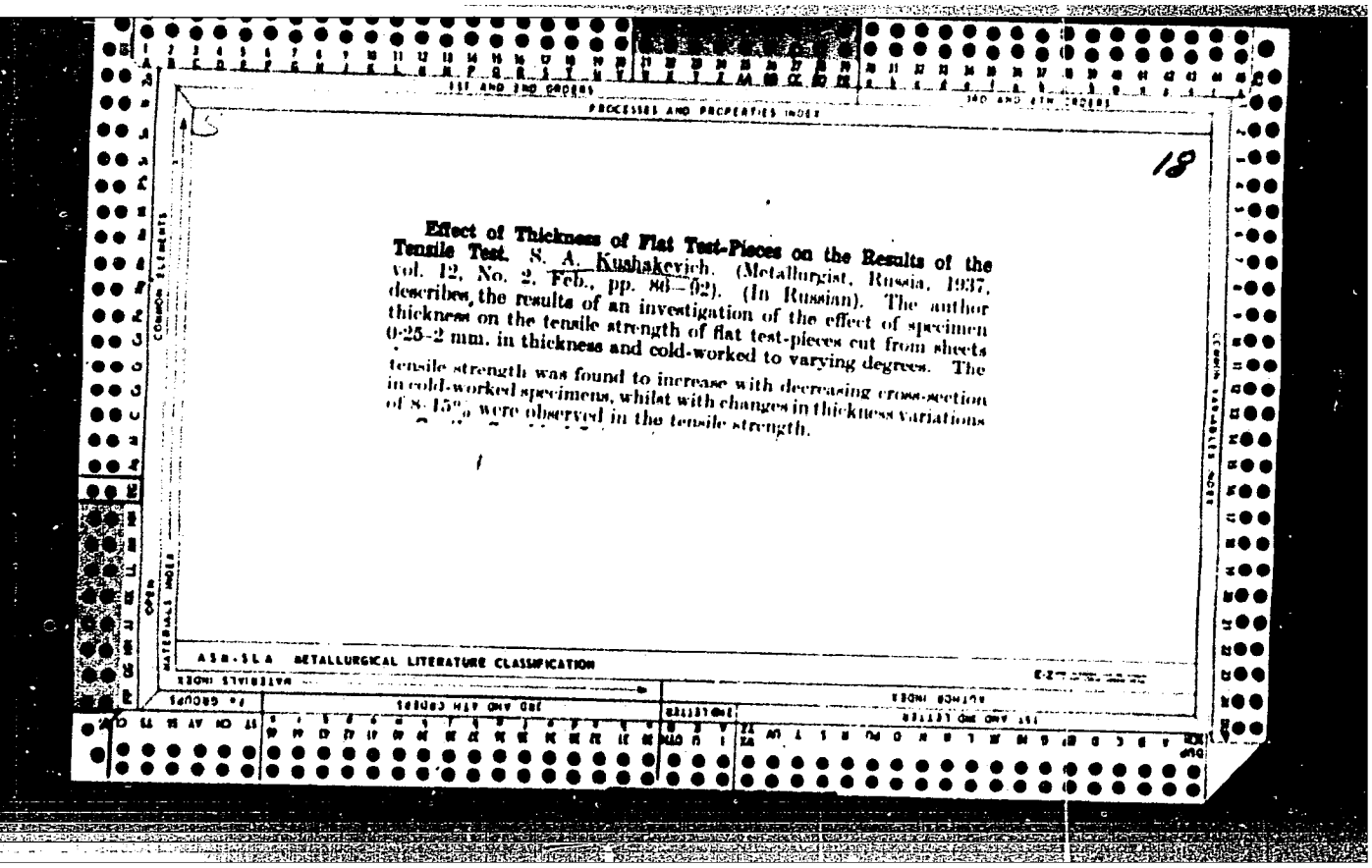


M

18

Causes of Cracks in the Cold-Rolling of Brass Ingots (68% Cu). S. A. Kushakevich (*Metallurg* (*Metallurgist*), **1937**, (1), 100–109). [In Russian.] The main cause of cracks in the cold-rolling of brass with 68% copper lies in the presence of long-shaped inclusions of the β-phase on the boundaries of columnar crystals. The existence of pores and cracks in the ingots is also of considerable importance. Ingots of this kind cannot be improved by any additional treatment. The presence of the β phase, as well as that of microscopic pores, does not affect the hot rolling of brass. The failures of the ingots are caused by too high a rate of cooling during crystallization. It is necessary, therefore, to develop appropriate methods of cooling and to choose lubricants of appropriate composition for each shape and size of the ingots. The casting of cold metal from Ajax furnaces is especially to be avoided. S. A.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

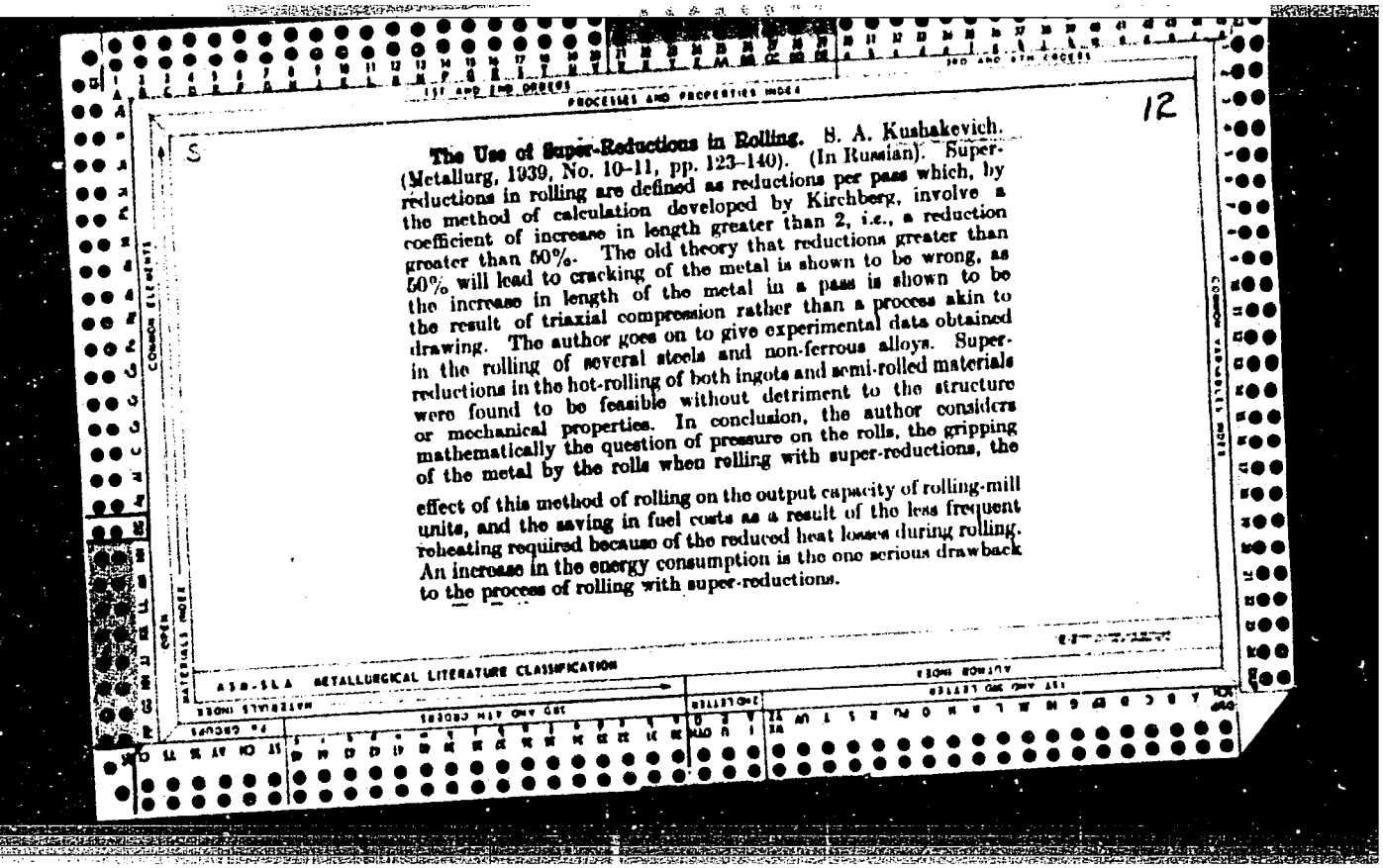


PROCESSES AND PROPERTIES INDEX

18

Effect of Thickness of Flat Test-Pieces on the Results of the Tensile Test. S. A. Kushakevich. (Metallurgist, Russia, 1937, vol. 12, No. 2, Feb., pp. 86–92). (In Russian). The author describes the results of an investigation of the effect of specimen thickness on the tensile strength of flat test-pieces cut from sheets 0·25–2 mm. in thickness and cold-worked to varying degrees. The tensile strength was found to increase with decreasing cross-section in cold-worked specimens, whilst with changes in thickness variations of 8·15% were observed in the tensile strength.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



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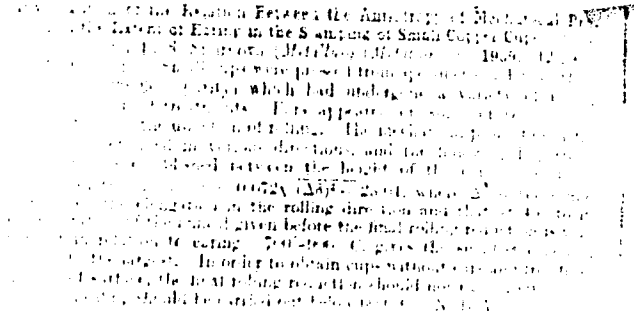
The Use of Super-Reductions in Rolling. S. A. Kushakevich. (Metallurg, 1939, No. 10–11, pp. 123–140). (In Russian). Super-reductions in rolling are defined as reductions per pass which, by the method of calculation developed by Kirchberg, involve a coefficient of increase in length greater than 2, i.e., a reduction greater than 50%. The old theory that reductions greater than 50% will lead to cracking of the metal is shown to be wrong, as the increase in length of the metal in a pass is shown to be the result of triaxial compression rather than a process akin to drawing. The author goes on to give experimental data obtained in the rolling of several steels and non-ferrous alloys. Super-reductions in the hot-rolling of both ingots and semi-rolled materials were found to be feasible without detriment to the structure or mechanical properties. In conclusion, the author considers mathematically the question of pressure on the rolls, the gripping of the metal by the rolls when rolling with super-reductions, the effect of this method of rolling on the output capacity of rolling-mill units, and the saving in fuel costs as a result of the less frequent reheating required because of the reduced heat losses during rolling. An increase in the energy consumption is the one serious drawback to the process of rolling with super-reductions.

M.A.

1 Properties of Mc Cl

S.A. KUSHAKEVICH



143

KUSHAKEVICH, S.A.; LAZAREV, M.M.

Operating machines for continuous annealing of nonferrous metal strips by the electric resistance method. TSvet. met. 29 no.10:64-69 O '56. (MLRA 9:12)

(Nonferrous metals--Electrometallurgy)
(Rolling mills)

SHUL'KIN, S.M., kand.tekhn.nauk; KUSHAKEVICH, S.A., inzh.; POTAPENKO, Yu. I., inzh.

Characteristics in the technology of the manufacture of hot-rolled sheets of 48-OT3 titanium alloys. Metallurgiia 2:282-293 '59. (MIRA 14:3)

(Rolling (Metalwork))(Titanium alloys)

69830

S/136/60/000/05/011/025
E071/E235

18.5100

AUTHORS: Morozov, L. N., Kartsgin, V. F., Kaganovich, I. N., Kushakevich, S. A., and Agarkov, V. F.

TITLE: Mastering the Technology of Rolling on a Merchant Mill of Rods from Titanium Alloys on a Metallurgical Works

PERIODICAL: Tsvetnyye metally, 1960, Nr 5, pp 57-61 (USSR)

ABSTRACT: The possibility of rolling rods from titanium and its alloys (OT4 and VT2-1) on a merchant mill and the quality of the products made were investigated. Chemical analyses of the ingots rolled are given in Table 1. Ingots of OT4 alloy were obtained by a vacuo-argon melting and those of VT2-1 by a double vacuo melting. As semis for rolling forged squares 80 x 80 to 230 x 230 mm, 1100 to 1400 mm long were used. The rolling was done on a mill 600 with water cooling of bearings and rolls at a rolling velocity 2 to 2.7 m/sec (Table 2). Temperature of the beginning of rolling 1020 to 1070°C and that of the end of rolling 950 to 980°C. The main parameters of roll passes for rolling rods of 16 mm diameter are given in Table 3; mechanical properties of rolled and annealed products are given in Table 4; examples of the microstructure of rods are reproduced in Figs 1 to 3, a comparison of the

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Mastering the Technology of Rolling on a Merchant Mill of Rods from Titanium Alloys on a Metallurgical Works

appearance of the surface of forged, pressed and rolled rods from VTZ-1 alloy is shown in Fig 4. It is concluded that rolling of titanium alloys is feasible. Under works' conditions, semis for rolling should be forged squares 230 x 230 mm 1100 to 1400 mm long. In order to obtain the best structure in finished products, rolling should be finished at a lower temperature, ie, below the range of the β phase. There are 4 figures and 4 tables.

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69696

S/126/60/009/03/019/033
E091/E435

18.1285

AUTHORS: Lerinman, R.M., Shchegoleva, T.V., Kushakevich, S.A. and Selitskaya, S.I.

TITLE: Electron Microscopic Investigation of Structural Transformations in Titanium-Manganese and Titanium-Chromium Alloys

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 437-440 (USSR)

ABSTRACT: The transformation of the β-phase on tempering quenched Ti-Mn and Ti-Cr alloys were studied. The following binary alloys, containing elements which stabilize the β-phase, were used for the investigation: Ti-Mn (10.5% Mn) and Ti-Cr (9.4% Cr). The alloys were prepared from titanium sponge of TGO quality, manganese of MR1 and chromium of KhO quality. Ingots were prepared by double vacuum melting. For the alloy containing Mn, the second fusion was carried out in argon. The composition of the alloys is shown in the table on p 438. The ingots were deformed by hot rolling and forging and the alloys were water quenched from 850°C (ie from the β-region). The time of heating prior to quenching was 30 minutes. Tempering was carried

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E091/E435

Electron Microscopic Investigation of Structural Transformations in Titanium-Manganese and Titanium-Chromium Alloys

out by soaking for 1 to 25 hours at 400 to 550°C and cooling in air. In order to reproduce the structures of the alloys, single-stepped angular prints (replicas) were prepared (Ref 10). The specimens were first chemically polished in anhydrous boiling ortho-phosphoric acid for 1 to 2 minutes. They were then etched in a mixture of 20% HF, 20% HNO_3 and 60% glycerin. The etching time varied from a few seconds to one minute. Apart from the electron microscopic investigation, hardness tests were made on a Rockwell machine with a diamond indenter, using a load of 150 kg. In Fig 1a, 1b and 1B, the microstructures of specimens of Ti-10.5% Mn alloys as tempered at 400°C for 1, 5 and 25 hours, respectively, are shown; in Fig 1g, 1d and 1e, those of similar specimens tempered at 550°C for 1, 10 and 25 hours, respectively. Fig 2 shows the microstructure of a Ti-9.4% Cr alloy (a - after quenching and tempering at 400°C for one hour; b - after quenching and tempering at 500°C for 25 hours). From the above microstructures

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Electron Microscopic Investigation of Structural Transformations in Titanium-Manganese and Titanium-Chromium Alloys

it can be seen that an ω-phase appears in Ti-Cr and Ti-Mn alloys after quenching and tempering at 400°C. It has the shape of very finely dispersed platelets, 300-400 Å thick. Periodically, chains of equiaxed particles and individual equiaxed particles can be observed which point to the fact that the ω-phase has an equiaxed shape from the very moment of its formation.

Gratitude is expressed to Yu.A.Bagaryatskiy and V.I.Dobatkin for the discussion of the results of this work. There are 2 figures, 1 table and 10 references, 7 of which are English, 2 French and 1 Soviet.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: April 22, 1959

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4

L 63193-65 EWP(k)/EWP(z)/EWA(c)/EWT(d)/EWT(m)/EWP(b)/T/EWA(d)/EWP(l)/EWP(w)/EWP(v)/

ACCESSION NR: AP5019973 EWP(t) WJW/JD/HW UR/0136/65/000/008/0084/0085

669.295.004.12:621.771.2

AUTHOR: Krasnikov, N. Ye.; Skryabin, N. P.; Kushakevich, S. A.; Nikitin, Ye. M.; Bazhenov, Yu. M.; Tokmakov, P. Ya.; Gritsenko, Yu. P.; Makhmutova, Ye. A.

TITLE: Investigation of the mechanical properties and structure of titanium alloys during rolling

SOURCE: Tsvetnyye metally, no. 8, 1965, 84-85

TOPIC TAGS: titanium alloy, titanium alloy rolling, titanium alloy structure, titanium alloy mechanical property

ABSTRACT: The mechanical properties and microstructure of BT5, BT8, and BT15 titanium alloys rolled on rolling mill 300 at various temperatures and with various reductions have been investigated. Specimens 20 x 28 x 140 mm were preheated and rolled with a rolling-end temperature of 800, 850, 900, 1000, and 1100C. The experiments showed that tensile strength of all the alloys increased as rolling temperature decreased from 1100 to 800C. Microscopic examination revealed that recrystallization was not completed at 800—850C, but only at 900—1000C. The recrystallized structure improved ductility; the values changed according to the curve, hav-

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L 63498-65
ACCESSION NR: AP5019973

ing a maximum at 900—1000C. A further increase in rolling temperature up to 1100C increased the grain size and concentration of impurities on the grain boundaries. As a result, the elongation and reduction of area dropped and the embrittlement increased. A change of rolling reduction from 10 to 27% affected the tensile strength insignificantly, but increased plastic characteristics considerably. This phenomenon is caused by improved structure. Orig. art. has: 3 figures and 2 tables. [WW]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, AS

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4123

Card 2/2

L 13286-66 EWT(m)/EWP(t)/EWP(b) IJP(c) MJW/JD

ACC NR: AP6001109 (N) SOURCE CODE: UR/0136/65/000/012/0086/0089

AUTHOR: Kushakevich, S. A.; Khanina, Z. K.

ORG: none

TITLE: Features of the pickling of titanium alloys by the sulfuric acid method

SOURCE: Tsvetnyye metally, no. 12, 1965, 86-89

TOPIC TAGS: pickling, titanium alloy, sulfuric acid, ammonium fluoride, hydrofluoric acid, metal scaling

ABSTRACT: The traditional method of removing scale from the surface of sheets in a solution of 6% HCl with 4% NaF involves a considerable unit consumption of expensive chemicals. Hence the authors investigated the ways and means of improving the composition of the Ti pickling agent. In particular, the reason for the sharp drop in the activity of HCl during the pickling of Ti was elucidated: the oxygen of the ambient air converts Ti(II) to Ti(IV) which is an inhibitor and passivates the solution. Hence, 30 other pickling solutions were tested. Of these, a 20% solution of H_2SO_4 with 4% NH_4F at a working temperature of 60°C proved to be of the greatest interest: it is three times as effective as a 6% solution of HCl with 4% NaF. The presence of F^- in the H_2SO_4 solution, even in small quantities (0.05 mole/liter) (introduced in the form of NH_4F or HF) increases the dissolution rate of Ti 20-40 times depending on the

Card 1/2 UDC: 669.295:621.794.4

L 13286-66

ACC NR: AP6001109

acid concentration. Activity of the solution was determined according to the difference in weight referred to a unit surface area of the specimen (g/m^2). Studies of the characteristic curves of activity of solutions with 5, 10 and 20% H_2SO_4 and 1 to 5% NH_4F indicate that the most active -- with respect to the number of times it can be used and the amount of metal pickled -- is a 20% solution of H_2SO_4 with 3-4% NH_4F (37-46 picklings). In the H_2SO_4 solutions containing HF, the activity is so high as to be excessive, thus leading to considerable heating of the solution and to corrosion of the metal as well. Hence solutions of this kind, to be effective, must contain a minimal content of H_2SO_4 (5%) and 2-3% HF. The absolute activity of the solutions with HF is lower than that of the solutions with NH_4F and decreases at a faster rate. Thus it may be concluded that the best pickling agent for Ti alloys is a solution containing 20% H_2SO_4 and 4% NH_4F. Orig. art. has: 3 figures, 2 tables.

SUB CODE: 07,11/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 2/2

ACC NR: AP6029675 (N) SOURCE CODE: UR/0136/66/000/008/0077/0080

AUTHORS: Krasnikov, N. Ye.; Kushakevich, S. A.; Tokmakov, P. Ya.; Kazadov, K. A.; Shilin, O. K.; Gritsenko, Yu. P.; Matveyev, G. I.

ORG: none

TITLE: Adoption of rolling large round profiles from titanium alloys

SOURCE: Tsvetnyye metally, no. 8, 1966, 77-80

TOPIC TAGS: titanium alloy, metal rolling, metal forming

ABSTRACT: The rolling of large diameter (25 - 60 mm) titanium alloy stock was studied. Prior to rolling the specimens were heated for 10 min in an induction furnace up to a temperature of 1270--1370K, and for 5 min in a silit furnace at a temperature of 1270--1370K. A schematic of the rolling scheme is presented (see Fig. 1). The rolling margin was calculated after the formula of N. Ye. Krasnikov and N. P. Skryabin (Tsvetnyye metally, 1965, No. 4)

$$\Delta h = \frac{\Delta h \cdot B_0 \sqrt{\Delta h \cdot r}}{(H+h)^2} \times \left[1{,}7 - \frac{B_0 \sqrt{\Delta h \cdot r}}{(H+h)^2}\right],$$

where Δh is the absolute compression, B_0 - width of zone before passage, H and h - height of zone before and after passage respectively, and r - the radius of the working roller. It was found that the experimental data were in good agreement with

Card 1/2 UDC: 669.295-422.1:622.771.2

L 10606-67

ACC NR: AP6029673

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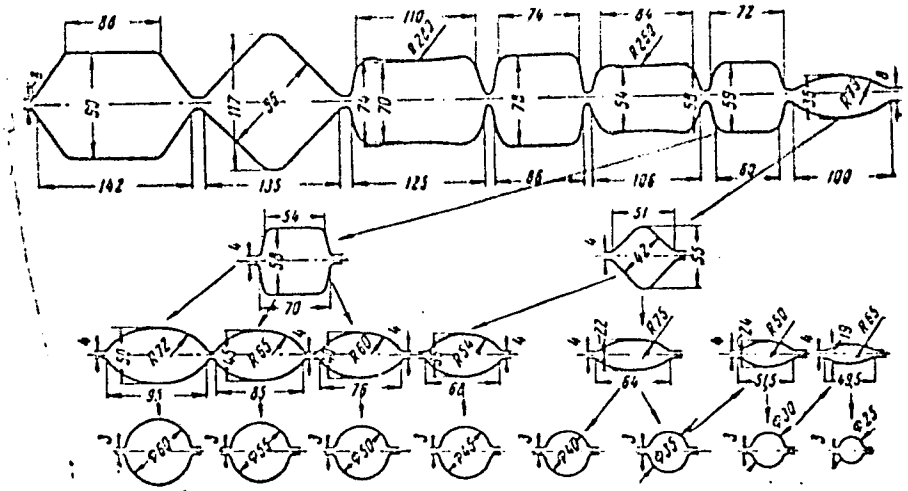

Fig. 1. Schematic for rolling large round profiles on rolling stand 450

the above equation. The degree of mold filling for hexagonal, square, and oval specimens was calculated after I. Ya. Tarnovskiy (Formoizmeneniye pri plasticheskoy obrabotke metallov, Metallurgizdat, 1953). The results are tabulated. It is concluded that rolling of large diameter stock made of titanium alloys VT1-1, VT3-1, OT4, VT5, VT5-1, VT6, VT8, VT15, VT14, and others yields products with satisfactory mechanical properties. Orig. art. has: 1 table, 3 graphs, and 4 equations.

Card 2/2 SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001