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Potassium influence on sugar beets with different doses of nitrogen. Studii cerc biol veget 15 no.4:479-497 '63.

1. Comunicare prezentata de academician N.Salageanu.

ANITIA, N.; ILLE, C.; VOICULESCU, Maria

Influence of phosphorus and nitrogen on sugar beets. Studii  
cerc biol s bot 16 no.6:547-556 '64.

1. Food Research Institute, Bucharest.

SOV/129-59-2-4/16

AUTHOR: Anitov, I.S., Candidate of Technical Sciences

TITLE: Carbide Formation During Isothermal Decomposition of Alloyed Austenite in Hypereutectoidal Steels  
(Karbidoobrazovaniye pri izotermicheskom raspade legirovannogo austenita zaevtektoidnykh staley)

PERIODICAL: Metallovedeniye i Termicheskaya Obrabotka Metallov, 1959, Nr 2, pp 19 - 22 (USSR)

ABSTRACT: The aim of the here described work was to study the isolation of the carbide phase during decomposition of the austenite in mono-alloyed steels containing about 0.9% C. The investigations were carried out in six hypereutectoidal alloyed steels for which the contents of the carbon, the alloying elements, the content of the alloying element in the carbide phase of annealed steel and the Curie-point temperature of carbides in the annealed steel are entered in Table 1 (this enumeration follows the sequence of the columns in the table). The choice of the composition of the steel was governed by the possibility of transforming into solid solution during austenisation a maximum quantity of each alloying element and by obtaining a duration of the decomposition

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of over-saturated austenite which is convenient for carrying out the experiments. All the steels were produced in a 5-kg induction furnace; after homogenisation annealing, the rods were forged into 15 x 15 mm sections and then they were annealed at 850 °C. From the rods 3 mm long, 1 mm dia cylindrical specimens were produced for studying the kinetics of decomposition of the austenite and also plates of 60 x 15 x 3 mm for carbide analysis. The kinetics of transformation of the austenite were investigated by means of an instrument of the type of magnetic scales; the process of carbide formation was studied on the basis of the chemical composition and the temperatures of the Curie point of carbide powders, which were produced by electrolytic solution of specimens after specified regimes of isothermal treatment. The obtained kinetic curves of decomposition of the austenite and of rejection of the alloying elements into the carbide phase are graphed for nickel steel (Figure a), manganese steel (Figure b), chromium steel (Figure c), tungsten steel (Figure d), molybdenum steel (Figure e) and

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vanadium steel (Figure e). It was established that the transition of carbide-forming elements from the solid solution into the carbide phase during isothermal decomposition of super-cooled austenite in hypereutectoidal steels usually occurs prior to and during the main transformation. Manganese and vanadium steels form an exception; in the case of these steels, the transition at 350 °C is completed prior to the main transformation. Excess carbide may exist in the form of alloy cementite; as the process develops, the quantity of alloy elements in the cementite increases (the Curie point is lower) and a special carbide is formed. It can be assumed that in a number of cases, it would not be possible to detect experimentally the formation of alloy cementite and its enrichment with the alloying element, particularly at elevated temperatures. In this case, the excess phase will manifest itself as a special carbide. It is possible that, during the first stages of decomposition, inter-metallic compounds separate out from the super-cooled austenite (in the case of Ni, Cr and V steels).

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During the main decomposition of the austenite, the alloying elements continue to separate out of the solid solution in the form of excess special carbides and alloy cementite and they can also be dissolved in the cementite which is contained in the eutectoid. Apparently at 350 °C the separation of the carbide phase and its formation proceeds in the same sequence as it does at 600 °C but the intensity and the degree of completion of these processes are lower in this case. From the point of view of increase in intensity of the final transition from the austenite into the carbide phase, the alloying elements of the investigated steels can be classified approximately in the following order: a) at 600 °C - Ni, Mn, Cr, W, V, Mo; b) at 350 °C - Mn, Ni, V, Cr, W, Mo. As regards the intensity of rejection in the excess carbides, these alloying elements can be classified for both temperatures in the following sequence: Mn, Ni, V, Cr, W, Mo. The quantity of alloying elements which remain dissolved in the ferrite is considerably larger in the case of

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decomposition at 350 °C (particularly for Mn and V).  
Nickel appears to be a non-carbide forming element and is  
dissolved to a slight extent in the excess cementite  
but there is no nickel in the pearlitic carbide.  
There are 1 figure, 1 table and 3 references, 1 of which  
is Soviet, 1 German and 1 Japanese.

ASSOCIATION: Leningradskiy tekhnologicheskii institut imeni  
Lensoveta (Leningrad Technological Institute  
imeni Lensovet)

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1.  
1.2400

2208, 2808, 2515

25657  
S/080/60/033/012/012/024  
D209/D305

AUTHORS: Anitov, I.S., and Maksimova, A.G.

TITLE: Galvano-diffusion brazing of titanium

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960,  
2724 - 2728

TEXT: Titanium is an excellent constructional material for many applications, but its low antifriction properties set it at a disadvantage and the present work was carried out in order to obtain firmly adhering brass layers on the surface of the titanium. Brass plating from cyanide solutions was not successful, so the possibility of using a galvano-diffusion method was investigated. The principle is to deposit a layer of copper of the required thickness on the titanium and then to fire the parts in a medium containing the vapors of volatile compounds of zinc, the copper being saturated with zinc to produce brass. Technically pure titanium mark VT-1, produced in a vacuum arc furnace was used, and the ingots weighing 50 kg were forged into billets from which samples for tes-  
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Galvano-diffusion brazing ...

ting of dia. 10 mm and length 15 mm were cut. The work consisted of the following basic steps: 1) Preparation of the surface of the titanium to receive the copper plate; 2) Deposition on the titanium of firmly adhering layers of copper of thickness up to 1.0 mm; 3) Firing in the vapors of volatile zinc compounds to produce brass. Before etching the samples, they were degreased with lime and washed with water. The best etching solution was found to be concentrated hydrochloric acid at 50°. For galvanic deposition of copper the standard acid electrolyte used was  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  — 200-250 g/l,  $\text{H}_2\text{SO}_4$  — 50-75 g/l, temperature 18-20° and current density 1-2 A/dm<sup>2</sup>. To obtain copper coatings of thickness greater than 30-40 μ, it was necessary to do the work in two stages. First, the etched parts are plated with copper 15-20 μ thick, are fired in a vacuum (10<sup>-3</sup> to 10<sup>-4</sup> mm Hg) to obtain a good bond with the base metal and are then plated with a second layer of copper to the desired thickness. With regard to diffusion brazing the copper layer was converted into brass by covering the parts with a mixture of zinc dust,

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fire-clay, ferro-silicon and ammonium chloride, the amount of which was calculated from the weight of copper deposited. Quite satisfactory results were obtained by firing at 730-750° for 6 hours, the copper layers 1.0 mm thick being almost completely brazed. The microstructure of the brazed layer (firing conditions 750° for 6 hours) is shown. It is clear that ( $\alpha + \beta$ ) brass is formed with transition layers on the Cu-Ti boundary. Friction testing was carried out on the Amsler machine with a rate of sliding of 0.4 m/sec. and with varying specific loads, from 15 to 100 kg/cm<sup>2</sup> using continuous lubrication. There are 3 figures and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc. ✓

SUBMITTED: January 7, 1960

Card 3/3

26861  
S/080/61/034/004/002/012  
A057/A129

188300

1413, 1416, 2808, 4016

AUTHORS: Anitov, I.S., Gorbunov, S. A.

TITLE: Oxidation of titanium and its alloys in air at high temperatures

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 4, 1961, 725 - 734

TEXT: The oxidation behavior of commercial-grade titanium and binary titanium alloys with 5 % aluminum, tin, copper, silicon, iron, chromium, molybdenum or vanadium, and with 1.5 % and 10 % vanadium, respectively, were investigated at 700 - 1,000°C in untreated laboratory air. Some general considerations on the influence of these elements on titanium oxidation are presented. In spite of many investigations related to titanium oxidation, such as works by P. Kofstad et al. (Ref. 3: Acta Chem. Scand., 12, 239, 1958), O. Kubaschewskiy and B. Hopkins, V. I. Arkharov and G. P. Luchkin (Ref. 5: DAN SSSR, 83(6), 837, 1952, and W. Kinna and W. Knorr (Ref. 6: Z. Metallk., 47, 8, 594, 1956) few data are published concerning the influence of the alloy elements. Oxidation of titanium is rather complex, since it obeys in the range 300 - 600°C the cubic rate law, at 650 - 850°C the parabolic rate law, and above 800-850°C the linear rate law,

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S/080/61/034/004/002/012  
A057/A129

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due to the effect of scale formation. Different data were also published on oxidation of titanium in oxygen and air atmosphere. A. D. Makkvillen and M. K. Makkvillen (Ref. 1: Titan (Titanium), Metallurgizdat, 1958) assume that the effect of alloy elements on scale formation should be considered on the basis of Wagner's diffusion theory.  $TiO_2$  formed on the surface during oxidation could be considered as semi-conductor with a deficiency in anions. Substitution of titanium ions in  $TiO_2$  by ions of metals with lower valency should cause an increase in electroconductivity and diffusion rate; an opposite effect should have metal ions with higher valency than titanium. Corresponding observations were made by K. Hauffe et al. (Ref. 9: Elektro-chem., 56, 937, 1952). The alloys investigated in the present work were prepared by double re-melting of a TFO (TGO) titanium sponge. The used titanium and alloys contained the following impurities: up to 0.20 % iron, 0.08 % silicon, 0.05 % carbon, 0.06 % chlorine, 0.03 % nitrogen, 0.15 % oxygen, 0.012 % hydrogen. Oxidation rate was studied at 700, 800, 900, and 1,000°C by the gravimetric method, at durations of the test of up to 45 hours. Oxidation of pure titanium in air occurs according to the parabolic rate law (Figure 1), just at the initial period the oxidation rate deviates from it (at 700°C in the first 3 hours oxidation occurs almost by the cubic rate law). The

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Oxidation rate of titanium ....

change to linearity at 900°C after 45 hours is explained by destruction of the scale. This occurs probably also at 1,000°C oxidation, but there (corresponding to observations by Ref. 3) impurities effect a quick sintering of scale. Results (Figures 2 - 5) on the effect of 5 % admixtures of alloy elements demonstrate that aluminum and silicon decrease the oxidation rate in the whole range of test temperatures. Iron, molybdenum, and vanadium increase the oxidation rate, the latter two especially at 1,000°C (Figure 5). While at 1,000°C oxidation of pure titanium the parabolic rate law was observed, 5 % vanadium admixtures effect a change to the linear rate law after 3 hours of oxidation and thus a strong increase in the oxidation rate. An analogous effect is observed with molybdenum admixtures at 1,000°C. Hence these admixtures apparently prevent sintering of scale at 1,000°C oxidation. According to Kubaschewski and Hopkins, as well as Leslie and Fontana, Cr/Ni alloys with high molybdenum content show a "catastrophic" oxidation. The latter is explained by the formation of volatile  $\text{MoO}_3$ . Among others, G. Ratheanan and J. Meijering (Ref. 11: Metallurgiya, 42, 167, 1950) agree with this hypothesis. Apparently in the present work the formation of low-melting, volatile  $\text{MoO}_3$  or  $\text{V}_2\text{O}_5$  (in vanadium alloys) effects the observed "catastrophic" oxidation of titanium at 1,000°C. Oxidation rate curves of other

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alloys for 1,000°C demonstrate that 5% copper alloys oxidize according to the cubic rate law, while for 5% iron and 5% tin alloys, this rate law is reached after 5 - 10 hours of oxidation. This somehow unexpected result can be explained by the influence of the nature of the oxides formed. Decrease of oxidation rate effected by aluminum and silicon, i.e., occurrence of the oxidation according to the cubic rate law with 5% admixtures of these elements indicates that oxide films of these alloys yield a good protection from oxygen diffusion into the metal. Hence aluminum and silicon admixtures to titanium cause a shift of oxidation kinetics towards lower temperatures (200 - 300°C lower than for pure titanium), i.e., aluminum and silicon increase the heat resistance of titanium alloys. In Figure 2 and 3 it is shown that copper causes at 700° and 800°C an increase, and at 900° and 1,000°C (Figure 4,5) a decrease of oxidation rate compared to pure titanium. Tin has little or no effect on titanium oxidation. Summarizing it can be said: Aluminum and silicon decrease, while vanadium, iron and chromium increase the oxidation rate of titanium in the whole investigated temperature range. Copper effects an increase at lower and a decrease of oxidation rate at higher temperatures, while molybdenum shows the opposite effect. Tin has practically no effect on titanium oxidation. Above certain temperatures vanadium and molybdenum effect "catastrophic" oxidation of titanium. Thus, in first ap-

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Oxidation rate of titanium ....

proximation, it seems that the hypothesis made by Ref. 1 related to substitution of titanium ions is valuable. But a more detailed analysis of the present results demonstrates considerable deviations from this rule. The present authors consider that also other factors influence titanium oxidation. For instance, properties of the formed scale the effect of alloy elements on the formation of scale and the oxygen-saturated layer below the scale are affecting the titanium oxidation rate. These effects have to be investigated separately for each of the elements. In connection with "catastrophic" titanium oxidation alloys containing 1.5 % and 10 % vanadium, respectively, were investigated. The obtained results (Figures 6 - 9) demonstrate at 1000°C for 5 % and 10 % vanadium alloys, and at 800 and 900°C for 10 % vanadium alloys a linear oxidation rate law, otherwise a parabolic rate law. The change to the linear rate law (800°C for 10 % vanadium and 1,000°C for 5 % vanadium) alloy indicates the beginning of "catastrophic" oxidation. Increase in vanadium content increases the oxidation rate at all investigated temperatures. Thus with increasing vanadium content the temperature of "catastrophic" oxidation also decreases (from 1,000°C with 5 % V to 800°C with 10 % V). Catastrophic oxidation occurs when volatile vanadium pentoxide melts and evaporates in the scale (oxide film). At lower temperatures apparently a spinel structure is formed, and thus melting of  $V_2O_5$  is more difficult. The

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A057/A129

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character of the form of vanadium-titanium alloy samples after oxidation at different temperatures is similar and indicates the prevailing diffusion of oxygen through the oxide film. The scale is formed principally in the phase interface metal-oxide. One of the factors effecting the destruction of the oxide film is the different molar volume of vanadium pentoxide and rutile. The present authors point out that in various technological operations the effect of vanadium on titanium oxidation must be considered. There are 11 figures and 11 references: 4 Soviet-bloc and 7 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov (All-Union Scientific Research Institute of Petrochemical Processes).

SUBMITTED: July 23, 1960

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30197

S/080/61/034/011/010/020

D243/D301

AUTHORS: Anitov, I.S., and Kukalenko, B.D.

TITLE: The effect of thermal processing on the corrosion resistance of the titanium alloy BT3-1 (VTZ-1) in sulphuric acid solutions

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 11, 1961, 2466 - 2472

TEXT: The authors state that the corrosion of thermally processed alloys has not been previously studied. They set out to examine the effect of thermal processing of an  $\alpha + \beta$  titanium alloy on corrosion resistance in  $H_2SO_4$  solutions and to detect any link between the alloy's structure and corrosion properties. To this end samples of VTZ-1 titanium (aluminum 6 %, molybdenum 8 %, chromium 3 %) were subjected to various thermal processing regimes. As corroding medium they used 25 % and 75 %  $H_2SO_4$  in whose concentrations the corrosion rate of titanium is the highest, according to V. V. Andreyeva, and V.N. Kazarin (Ref. 1: DAN SSSR, 121, 5, 1958).  
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D243/D301

The effect of thermal processing ...

The majority of trials were carried out at 22-24°C with a few at 12-14°C. Three or four specimens were used for a single trial, using 300-400 ml. solution per sample. The samples remained in 25 % H<sub>2</sub>SO<sub>4</sub> for 260 hours and in 72 % H<sub>2</sub>SO<sub>4</sub> for 48 hours. Corrosion was estimated from external appearance, duration of passivity and loss of weight (gm/l mm<sup>2</sup>/hr calculated over whole test period with correction for passivity period). Maximum scatter of data for weight loss, under equivalent conditions, was approximately 10%. The structure of the samples was studied with optical (x500) and electron (x10,000) microscopes. It was found that thermal processing had a marked effect on the corrosion resistance of VTZ-1 titanium alloy in 25 % H<sub>2</sub>SO<sub>4</sub> as shown by the change in the period of passivity and corrosion rate of the alloy. This effect was linked with structural differences e.g. the degree of heterogeneity, nature of the dispersion phases and the state of strain of the alloy. The protective properties of the natural oxide film depended mainly on the heterogeneity of the structure, the period of passivity diminishing with coarser structure. Single phase or coarsely heterogene-

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The effect of thermal processing ...  
ous alloys had the highest corrosion resistance which was also in-  
creased by an  $\alpha + \alpha'$  dispersion mixture or states of strain.  $\omega$ -pha-  
se had no effect. At 12-14°C, the corrosion rate was much lower,  
largely due to an increase in the period of passivity. Conversely,  
in 75 % H<sub>2</sub>SO<sub>4</sub> corrosion proceeds much more rapidly largely becau-  
se of a decrease in the passivity period. There are 5 figures, 2  
tables and 2 Soviet-bloc references.

SUBMITTED: January 7, 1961

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42250

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

18. 500  
18. 1275

AUTHORS: Mozhayev, S.S., Sokiryanskiy, L.F. and Anitov, I.S.

TITLE: On the mechanism of high-temperature oxidation of titanium

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.4, 1962, 637-638

TEXT: G. Wallwork and A. J. Jenkins (J. Electrochem. Soc., 1959, 106, (1), 10) explain the transition from the parabolic law of oxidation to the linear law by means of the hypothesis according to which the rate of oxidation is controlled by the gradient of oxygen concentration in the metallic base of the specimen and he assumed that, at the end of the parabolic oxidation period, the gradient reaches a steady-state value and, as a result, the rate of oxidation remains constant. J. Stringer (Acta met., 1960, 8, 11, 758) found that during oxidation at 950°C according to the parabolic law about 45% of the entire oxygen absorbed by the titanium is dissolved in the core of the specimen, whilst at the end of the linear oxidation section only 5% is dissolved. Analysis of experimental data available to the authors of this Card 1/3

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E073/E535

paper indicates that during transition from the parabolic to the linear oxidation law, the rate of scale formation increases appreciably but no appreciable changes were found in the kinetics of dissolution of oxygen in the metal. Due to the increased rate of scale formation, the ratio between the quantity of oxygen which is chemically combined and the oxygen which is dissolved in the metal changes. However, since in the "linear" range the absolute quantity of the oxygen dissolved in the metal continues to increase with the progress of time, the depth of penetration of the oxygen into the titanium must increase. This was confirmed by microhardness measurements of specimens which were subjected to oxidation at 900°C for periods between 0.5 and 16 hours. Some of the specimens were exposed to oxidation over a long period so as to ensure transition into the linear range, after which the scale was removed and the specimens were subjected to a second oxidation at the same temperature. If the gradient of oxygen concentration in the metallic core would be the factor controlling the rate of oxidation, the repeated oxidation would have to proceed in accordance with the linear law. However, the new curves of the

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total weight increment, although somewhat lower, had exactly the same character, i.e. at first, oxidation was in accordance with a parabolic law and then in accordance with a linear law. Thus, the obtained experimental results are not in agreement with the hypothesis of Wallwork and Jenkins, who associated the transition from the parabolic to the linear law with the formation in the surface layer of the metal of a saturated zone with a constant gradient of oxygen concentration. This transition is due to processes which develop in the oxide film itself and, therefore, further investigations should be directed towards the study of the properties and structure of this film. There are 2 figures.

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SUBMITTED: May 16, 1962

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ACCESSION NR: AT4007031

S/2598/63/000/010/0100/0107

AUTHOR: Gorbunov, S. A.; Anitov, I. S.

TITLE: Kinetics of oxidation of commercial grade titanium at high temperatures in air

SOURCE: AN SSSR. Institut metallurgii. Titan i yego splavy\*, no. 10, 1963. Issledovaniya titanovy\*kh splavov, 100-107

TOPIC TAGS: titanium oxidation, high temperature oxidation, scale structure, oxide layer structure, titanium oxidation kinetics, titanium oxidation mechanism

ABSTRACT: Oxidation of commercially pure titanium in heated laboratory (undried) air was studied at constant temperatures of 800-1200 C. The oxidation mechanism has been elicited by investigating the comparative O<sub>2</sub> distribution in the oxide layer and in the contaminated Ti zone situated beneath it, the thickness of the gas-contaminated surface, measured with a PMT-3 apparatus under 50 g load (no further details given), and the thickness and structure of the oxide scale after sintering (structural analysis by X-ray). The oxidation mechanism from 1100-1200 C differs from that at 800-1000 C principally in the higher diffusion rate of Ti atoms toward the surface. Further, at 1100-1200 C, O<sub>2</sub> distribution differs between the oxide scale layer and the air-contaminated layer. The oxidation rate measured up to 32

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hours, changes from linear (800, 900 C) to parabolic (1000 C) to cubic in nature (1100, 1200 C) with 4-hour experimental values at these five temperatures, of 10, 40, 220, 280 and 460  $\mu\text{m}^2$ , respectively. The air contaminated Ti layer is characterized by a thin alpha-Ti shell of high hardness owing to high O<sub>2</sub> content, overlaid by up to several mm of beta-Ti of lesser hardness and an O<sub>2</sub> content of 0.15-2%. "G. P. Nadulenko also took part in the work." Orig. art. has: 3 tables and 5 graphs.

ASSOCIATION: Institut metallurgii AN SSSR (Metallurgical Institute AN SSSR)

SUBMITTED: 00

DATE ACQ: 27Dec64

ENCL: 00

SUB CODE: *MM*

NO REF SOV: 002

OTHER: 005

Card 2/2



ACCESSION NR: AP4039277

S/0148/64/000/005/0135/0139

AUTHORS: Anitov, I.S.; Kukalenko, B.D.

TITLE: The effect of heat treatment on the corrosion resistance of "VTZ-1" type Ti alloy

SOURCE: IVUZ. Chernaya metallurgiya, no. 5, 1964, 135-139

TOPIC TAGS: heat treatment, corrosion resistance, Ti alloy, mechanical property, hardening

ABSTRACT: The authors studied the effects of heat treatment on the mechanical properties of type  $\alpha+\beta$ -Ti-alloy and its corrosion resistance. The specimens were widely used "VTZ-1" Ti-alloy specimens which contained 6% Al, 3% Mo and 3% Cr. They were prepared by 800C annealing of 16 mm diam. rods. The heat treatment temperatures were 850, 950, 1050 and 1100C, with a holding period of 30 minutes followed by normalizing and water quenching. Cylinders with a 12-15 mm diam. and a height of 20-22 mm were cut out. A 25% solution of sulfuric acid was used for corrosion tests at 20-24C and 12-15C. The specimens remained in the medium from 260 to 1000 hrs. Ultimate

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strength and hardness increased with tempering temperatures up to 500C while plasticity was equal to zero in all tests. The rate of corrosion dropped with raised heat treatment temperatures and at 1100C corrosion attack was negligible. Thermal oxidation enhanced corrosion resistance substantially. Heat treatment affected the structure and strength of the natural passivating oxide film formed by special air heating at temperatures above 600C as well as the strength of the material. Although tempering at 300-400C had negligible effect on the structure after hardening, the rate of corrosion of tempered specimens was lower than that of hardened specimens because of the relief of cooling stresses. In high-hardness alloys (normalizing and quenching from 1050C followed by 500C tempering) the rate of corrosion was rather high. Orig. art. has: 4 figures

ASSOCIATION: Leningradskiy tekhnologicheskii institut (Leningrad Institute of Technology)

SUBMITTED: 03May63

SUB CODE: MM

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NR REF SOV: 002

ENCL: 00

OTHER: 000

L 30370-66 EWT(m)/EWP(t)/ETI IJP(c) JD/HW/JG/WB/JXI(CZ)/CE  
ACC NR: AT6012384 SOURCE CODE: UR/0000/65/000/000/0148/0154

AUTHORS: Nadutenko, G. P.; Gorbunov, S. A.; Anitov, I. S.; Teodorovich, V. P.

ORG: none

TITLE: A study of the effect of nickel, silicon, and niobium on the oxidation of titanium at high temperatures

SOURCE: Soveshchaniye po metallokhimii, metallovedeniyu i primeneniyu titana i yego splavov, 6th. Novyye issledovaniya titanovykh splavov (New research on titanium alloys); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1965, 148-154

TOPIC TAGS: titanium, titanium alloy, thermal stability, corrosion resistance, nickel, silicon, niobium, metal oxidation, binary alloy, oxidation kinetics

ABSTRACT: The oxidation in air of binary titanium alloys is studied at a temperature range of 800--1200C. The alloys had 1.5, 5 and 10% nickel and silicon, and one had 25% niobium. The alloys were prepared by double melting of electrodes in an electric-arc vacuum furnace. The oxidation kinetics were studied by the method of periodic weighing. The specimens were heated in air for up to 16 hrs at 800--1000C and up to 8 hrs at 1100--1200C. It was found that 1.5% Si in the alloy was optimum for

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ACC NR: AT6012384

increasing the thermal stability of titanium alloys at high temperatures; a further increase in the Si content decreases the oxidation resistance of the alloys. The introduction of Ni<sup>v</sup> considerably reduces the thermal stability as compared with unalloyed titanium. The introduction of 25% Nb<sup>v</sup> greatly increases the thermal stability of the alloy, particularly at 1100--12000. Orig. art. has: 4 figures and 1 table. 2

SUB CODE: 11/

SUBM DATE: 02Dec65/

ORIG REF: 010/

OTH REF: 001

Card 2/2 CC

ACC NR: AP7005133

SOURCE CODE: UR/0126/66/022/004/0591/0597

AUTHOR: Lerinman, R. M.; Khvostyntsov, K. I.; Nikanorov, M. A.; Anitov, I. S.; Ksenofontova, T. B.

ORG: Institute of Metal Physics, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Combined effect of plastic deformation and aging on the structure and properties of TS6 titanium alloy

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 4, 1966, 591-597

TOPIC TAGS: titanium alloy, metal aging, plastic deformation, phase composition, metal recrystallization / TS6 titanium alloy

ABSTRACT: The effect of plastic deformation (rolling with degrees of deformation amounting to 3, 10 and 40% and aging (at 480°C for 2, 10, 30 and 100 hr) on the fine structure (the kinetics of decomposition of the  $\beta$ -phase, dispersity and the distribution of the  $\alpha$ -phase) of TS6 titanium alloy (3.22% Al, 3.42% Mo, 7.80% V, 10.80% Cr, 0.18% Fe, 0.03% C, 0.01% Si, 0.07% O<sub>2</sub>, 0.011% N<sub>2</sub>, with Ti as the remainder) was investigated by means regular and electron microscopy and measurements of hardness and tensile strength. It is shown that plastic deformation accelerates the decomposition of the metastable  $\beta$ -phase and results in a more fine-

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UDC: 548.526

ACC NR: AP7005133

-grained and uniform structure devoid of undecomposed boundary-layer and intragranular residues of the  $\beta$ -phase, which, together with the high degree of dispersity of the particles of the segregating  $\alpha$ -phase, leads to a general improvement in mechanical properties. Quenching the alloy from 800°C following 3% deformation results in polygonization; following 10% deformation, in partial recrystallization; and following 40% deformation, in total recrystallization of the structure. In this last case, since the decomposition of the recrystallized  $\beta$ -phase occurs slowly, a marked change in the alloy's hardness is observed only after 100 hr of aging at 480°C. This may be a cause of the heterogeneity of the alloy's properties following its hardening by heat treatment. The highest hardening rates were observed for the specimens subjected to 3 and 10% deformation prior to their quenching, which indicates that an incompletely recrystallized structure is favorable to the increase in mechanical strength following aging. Orig. art. has: 7 figures, 3 tables.

SUB CODE: <sup>11</sup> 20/ SUBM DATE: 05Feb66/ ORIG REF: 001/ OTH REF: 001

Card 2/2

ACCESSION NR: AP4018858

S/0043/64/000/001/0005/0014

AUTHOR: Anitova, Ye. S.

TITLE: The restricted nature of solutions of a system of third-order differential equations

SOURCE: Leningrad. Universitet. Vestnik. Seriya matematiki, mekhaniki i astronomii, no. 1, 1964, 5-14.

TOPIC TAGS: differential equation, third order differential equation, Hurwitz condition, dissipative system

ABSTRACT: The author has investigated the restricted nature, as  $t \rightarrow \infty$ , of the solutions of the system of differential equations:

$$\begin{aligned}\frac{dx}{dt} &= a_{11}x + a_{12}y + a_{13}z + p_1(t, x, y, z), \\ \frac{dy}{dt} &= f(x) + a_{21}y + a_{22}z + p_2(t, x, y, z), \\ \frac{dz}{dt} &= a_{31}x + a_{32}y + a_{33}z + p_3(t, x, y, z),\end{aligned}\tag{1}$$

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ACCESSION NR: AP4018858

where  $a_{ij}$  are constants,  $f(x)$  and  $p_i(t, x, y, z)$  ( $i = 1, 2, 3$ ) are continuous and ensure the uniqueness of the solution for all  $x, y, z, t$ ;  $f(x)$  satisfies the generalized Hurwitz condition:  $ax^2 < xf(x) < \beta x^2$  when  $|x| \geq 1$  (where  $a$  and  $\beta$  are the limits for the variation of parameter  $x$ ). Under these conditions, the roots of the characteristic equation of the linear system corresponding to (1) all have negative real parts. It is assumed that all the perturbing functions  $p_i(t, x, y, z)$  are in modulus less than some constant  $M > 0$  for all  $x, y, z, t$ . After some manipulations and changes of notation, system (1) is put into the form:

$$\begin{aligned} \frac{dx}{dt} &= y - x + p_1(t, x, y, z), \\ \frac{dy}{dt} &= z - f(x) + p_2(t, x, y, z), \\ \frac{dz}{dt} &= -ax - bf(x) + p_3(t, x, y, z), \end{aligned} \quad (2)$$

for which the Hurwitz conditions are:

$$\begin{aligned} a + b \frac{f(x)}{x} &> 0 \quad \text{при } |x| > 1, \\ (1 - b) \frac{f(x)}{x} - a &> 0 \quad \text{при } |x| > 1. \end{aligned} \quad (3)$$

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ACCESSION NR: AP4018858

In system (2), seven different cases are distinguished depending on the natures of a and b. The author then considers the solution of four of these cases. She derives sufficient conditions for the dissipativity and for the existence of periodic solutions when the  $P_i(t, x, y, z)$  are periodic. A system is said to be dissipative if there exists a bounded region such that all solutions of the system enter into this region as  $t \rightarrow \infty$  at some time and remain there from then on. Orig. art. has: numerous conditions.

ASSOCIATION: None

SUBMITTED: 03Dec62

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 002

Card

3/3

ANITOVA, Ye. S.

Boundedness of the solutions to a certain system of third-order differential equations. Vent. LGU 19 no. 1:149-151 '64. (MIRA 17:7)

211  
16. 24/00

S/020/62/145/003/001/013  
B172/B112

AUTHOR: Anitshchenko, R. I.

TITLE: A boundary value problem for Thomas - Fermi and Thomas - Fermi - Dirac equations <sup>16</sup>

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 3, 1962, 483-486

TEXT: Non-negative solutions are sought for the more general boundary value problem

$$\begin{aligned} \psi''(x) &= f(x, \psi(x))\psi(x), \\ \psi(0) &= y_0, R\psi'(R) - \psi(R) = -q \end{aligned}$$

$(y_0 > 0, q < y_0, R > 0)$  are sought. The following assumptions are made concerning the functions  $f(x,y)$  and  $\psi(x)$ : (1)  $f(x,y)$  is continuous for  $x \geq 0, y \geq 0$ ; (2)  $f(x,y)$  increases together with  $y$  in the domain  $x \geq 0, y \geq 0$ ; (3)  $\psi(x)$  is continuous for  $x > 0$ , positive for  $x > 0$ , and integrable on the interval  $[0, X]$  where  $X > 0$ ; (4)  $f(x,0) > 0$  for  $x > 0$ ; (5)  $f(x,y)$  satisfies a Lipschitz condition with respect to  $y$  in the domain  $Q \ni y > \alpha > 0, P \ni x \geq 0$  for any positive  $P, Q, \alpha$ ; ✓

Card 1/2

SALIN, B.A.; ANIYATOV, I.

Lower age boundary of Caledonian intrusions in the Kandyktas  
Mountains (southern Kazakhstan). Izv.AN Kazakh.SSIt.Ser.geol.  
no.4:75-77 '62. (MIRA 15:7)  
(Kandyktas Mountains--Rocks, Igneous) (Geological time)

ANIZOV, M.A.; MANULKIN, Z.M.; TATARENKO, A.N.

Tashkent Pharmaceutical Institute is 25 years old. Uzb.khim.  
zhur. 6 no.5:87-88 '62. (MIRA 15:12)

1. Tashkentskiy farmatsevticheskiy institut.  
(TASHKENT--PHARMACY--STUDY AND TEACHING)

HUNGARY

ANKA, Dr Peter, and SALACZ, Dr Tamas, [Affiliation not given].

"Isolated Injuries of the Pancreatic Gland"

Budapest, Magyar Traumatologia, Orthopaedia es Helyreallito Sebészet.  
Vol 6, No 3, 1963; pp 216-221.

Abstract [Authors' English summary]:

The authors describe the symptoms of isolated injuries of the pancreatic gland occurring in connection with closed abdominal injuries caused by blunt objects, the mechanism of such injuries, their frequency, the difficulties of their recognition, the course and the possibilities of surgical treatment of the disease. On the basis of cases treated by the authors resection should be considered to be the best solution but in certain cases pancreatojejunostomy may be recommended. The authors draw attention to the importance of the careful post-operative treatment of the patients.

[53 references, predominantly Western].

1/1

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L 46796-66 EWP(w)/EWP(u)/EWP(e) L 46796-66  
ACC NR: AP603278? SOURCE CODE: GE/0029/00/000/002/0023/0027

AUTHOR: Anka, Tibor M. (Budapest)

ORG: none

TITLE: Effect of technology on the properties of an EA1MgSi alloy

SOURCE: Neue hutte, no. 2, 1966, 83-87

TOPIC TAGS: aluminum silicon alloy, mechanical property

ABSTRACT: The effects of technological parameters on the properties of an EA1MgSi alloy, containing smelter-aluminum EA1 99.5 with approximately 0.6% magnesium and silicon, were investigated. Best mechanical alloy properties were attained by inserting a homogenizing heating followed by quenching, and by modifying the cold-forming operation. The actual parameters of these processes depend somewhat on the plant and on the nature and end-use of the article. Data were presented for assisting in the selection of these parameters for specific purposes. Orig. art. has: 7 figures and 1 table. [JPRS: 35,398]

SUB CODE: 11, 20 / SUBM DATE: 15Oct65 / ORIG REF: 003 / OTH REF: 005

Card 1/1 *tdh*

ANKERST, Erik

Derecsani syndrome, ophthalmologic, anthropologic and genetic aspects. Zdrav. vestn. 34 no.5/6:111-117 '65.

1. Oftalmoloska klinika medicinske fakultete v Ljubljani (pred-  
natojalca: prof. dr. Karmen Derecsani).



ANKHIMYUK, Vyacheslav Leont'yevich; IL'IN, Oleg Pavlovich;  
TETERINA, L.N., red.

[Automatic control of electric drives] Avtomaticheskoe  
upravlenie elektroprivodami. Minsk, Vysshaya shkola, 1965.  
469 p. (MIRA 19:1)

83522  
S/167/59/000/006/001/002  
A110/A029

13,2000

AUTHOR: Ankhimiyuk, V. L.; Il'in, O. P.

TITLE: The Synthesis of Correcting Devices of Dynamoelectric Control Systems

PERIODICAL Izvestiya Akademii nauk Uzbekskoy SSR, 1959, No. 6, pp. 5-19.

TEXT: The modern control systems show frequently, as a consequence of different known factors, inadmissible oscillations. Therefore, the automatic control systems need correcting, i.e., stabilizing devices. The control system is composed of basic devices: devices for the given working conditions, and the correcting devices for improving the quality of transition processes. The computation of correcting devices, choosing of means of stabilization, of parameters and of the place where the stabilizing circuit is to be connected, which is combined with the calculation of the transition processes of a system under actual working conditions, is a cumbersome and complex task and does not permit an optimum solution to be found. The basic problem of the synthesis is to find easier methods of calculation. In the literature some methods are cited (Refs. 2, 3). The

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S/167/59/000/006/001/002  
A110/A029

The Synthesis of Correcting Devices of Dynamoelectric Control Systems

article describes a technical method of a synthesis of correcting devices, which can be used when designing different control systems with one stabilization circuit. The designing of a correcting device consists of the determination, at a required quality of the control system, of the amplification factor and the timing constant of the stabilization circuit, of the place of connection and the choice of the means of stabilization. Criteria for the quality of the control system are: 1) duration of the transition process, 2) value of the conversion, 3) oscillation, 4) value of retarding torque and 5) statical deflection. The duration of the transition process is characterized by the equation

$$t_{trans} = \frac{3 \text{ to } 4}{P_{min}} \quad (1)$$

where  $P_{min}$  is the value of the least real component of the complex solution of the characteristic equation (Ref. 1). The value of the conversion is determinable after the solution of the differential equation of the system. A minimum value is to be guaranteed. The oscillation appears as the ratio between the imaginary ( $\omega$ ) and the real ( $\alpha$ ) component of the

Card 2/4

83522

S/167/59/000/006/001/002  
A110/A029

The Synthesis of Correcting Devices of Dynamoelectric Control Systems

complex solution :  $k = \omega/\omega_c$  (2). The correcting device has to guarantee the least oscillation. The retarding torque originates in the conversion, being accompanied by the slowing down of the motor, which can lead to mechanical shocks in the transmission system (Ref. 4). The correcting device has to limit the retarding torque. Notice is to be taken of the idling. - The suggested method results in the setting up of a field of solutions in the plane of the sought parameters. This leads to the location of the optimum parameters (amplification factor and timing constant) of the stabilizing circuit. The amount of the conversion and of the retarding torque is determined by computation of the transition process, at chosen values of the parameters and given initial conditions. After the description of the method a general computation of a stabilizing circuit is carried out as an example of the application of this method. Differential equations are set up, which are solved and discussed. The setting up of the field of solutions is explained; a sequence of 5 points is to be obeyed. After this theoretical treatment a numerical example is given: a slabbing mill (Fig. 1) with two motors, connected in series. Each motor has a capacity of 150 kw, the generator 500 kw. Figs. 2-7 are representations of the functions and belong

X

Card 3/4

ANKHIMYUK, V.L., kand.tekhn.nauk, dotsent; IL'IN, O.P., kand.tekhn.  
nauk, dotsent

Selection of the power rating of an asynchronous motor in choke  
controlled drives. Elektrichestvo no.4:39-42 Apr '61.

1. Belorusskiy politekhnicheskii institut (for Ankhimiyuk).  
(MIRA 14:8)
2. Sredneaziatskiy politekhnicheskii institut (for Il'in).  
(Electric motors, Induction)  
(Electric driving)

3/142/02/000/003/005/007  
3236/2502

**AUTHORS:** Ankhimiyuk, V. S., Candidate of Technical Sciences, Do-  
cent, and Shoyun, G. P., Engineer

**TITLE:** Investigating a tachometer bridge employed as a veloc-  
city-type transducer

**PERIODICAL:** Izvestiya vysshihkh uchebnykh zavedeniy. Energetika,  
no. 3, 1962, 39-42

**TEXT:** The tachometer bridges employed in the control of industrial drives, whilst providing high-speed feedback combined with simplicity of design, are limited by the relative error, governed by the speed and the load on the drive. This factor lends importance to a knowledge of the conditions offering the least error over a wide range of speed measurement. It is demonstrated from the circuit equations that the minimum relative error must be sought for each speed of rotation by determining the most favorable bridge-arm ratio on the basis of the mathematical argument. Allowing a permis-  
Card 1/2

Investigating a tachometer ...

5/143/027/00,003/005/007  
0235, 0202

ible error of 2 to 5%, tachometer bridges can be employed successfully on electric drives having an armature-voltage speed-regulation range within the limits of 1:3 - 1:4. The error rises sharply on low speeds in the order of 150 and 250 r.p.m. There are 4 figures. ✓

ASSOCIATION: Belorusskiy politekhnicheskii institut (Belorussian Polytechnic Institute)

SUBMITTED: July 4, 1961

Card 2/2

ANKHIMYUK, Vyacheslav Leont'yevich, kand. tekhn. nauk, dotsent;  
IL'IN, Oleg Pavlovich, kand. tekhn. nauk, dotsent

Analysis of feedback systems in automated electric drives.  
Izv. vys. ucheb. zav.; elektromekh. 8 no.4:441-449 '65.

(MIRA 18:5)

1. Kafedra elektricheskikh mashin i elektroprivoda Belorusskogo  
politeknicheskogo instituta (for Ankhimyak). 2. Belorusskiy  
politeknicheskii institut (for Il'in).



USSR/Farm Animals - Honey Bee.

0-4

Abs Jour : Ref Zhur - Biol., No 1, 1959, 2752

Author : Malinovich, G.P.

Inst : Moscow Agricultural Academy in Timiryazev

Title : Experiment in the Acclimatization of Indian Bees and  
Their Utilization for Pollinating Farm Crops.

Orig Pub : Dokl. Mosk. s.-kh. akad. in K.A. Timiryazeva, 1957, 79P.  
30 ch. 2, 307-319.

Abstract : The families of Apis indica L. were obtained from China.  
Under conditions of the Moscow region, the Indian bees  
carried out flights at a temperature of approximately  
9°C., and commenced to fly out for work at a temperature  
3-5° lower than the starter temperature of the local bees.  
The rapidity of work of the Indian bees is greater than

Card 1/2

ANKERST, Erik  
SURNAME (in caps); Given Name

(2)

Country: Yugoslavia

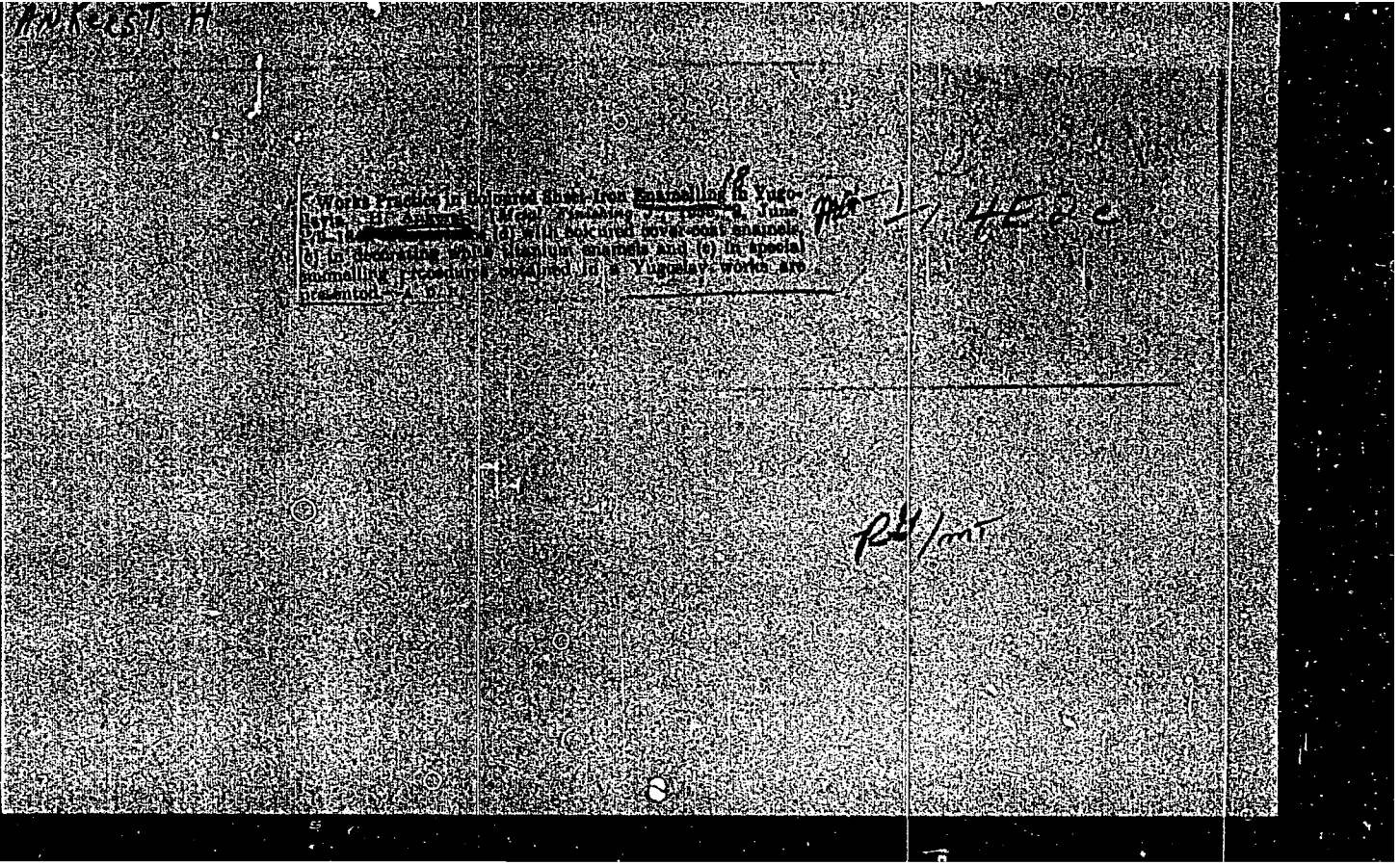
Academic Degrees: not given

Affiliation: Eye Clinic (Ocesna klinika), Ljubljana; Director (Predstojnik);  
Docent DR. Carmen DEREANI

Source: Ljubljana, Zdravstveni vestnik, No 3-4, 1961, pp 61-67.

Data: "Morbus Besnier-Boeck-Schaumann Ophthalmologic Aspects."

17



ANKHIMYUK, V. L.

112-2-3417

Translation from: Referativnyy Zhurnal, Elektrotehnika, 1957, Nr 2, p. 129 (USSR)

AUTHOR: Ankhimyak, V. L.

TITLE: The Computation of Currents in an Induction-Synchronous System With Two-Zone Control (Raschet tokov asinkhronno-sinkhronnogo kaskada pri dvukhzonnom regulirovanii)

PERIODICAL: Tr. Sredneaz. politekhn. in-ta, Tashkent, Gosizdat, UzSSR, 1955, pp. 379-390

ABSTRACT: Induction-synchronous systems (ISS), a further development of the Kramer and Scherbius systems are used in alternating current electric power drives of the type used for wind-tunnel blowers, mine ventilators, rolling mills, etc., where a wide range of speed control is required. The constant-power ISC consists of a main (working) induction motor the slip energy of which is transmitted (from its slip rings) to the variable speed unit which consists of a synchronous motor and a direct current generator mounted on this motor's shaft. This generator returns the slip energy to the direct current motor which is mounted on the common shaft with the main motor. The constant-torque ISS

Card 1/2

ANKHIMYUK, Vyacheslav Leont'yevich; KUZ'NICHENKO, G.A., red.

[Theory of automatic control: summary of lectures.  
Teoriia avtomaticheskogo upravlirovaniia, konspekt  
leksiï. Minsk, Izd-vo "Vysshiaia shkola," 1964. 220 p.  
(EIRA 17:12)

ANKIEWICZ, A.

"Machine Tools With Removable Cutters" p. 147. (Mechanik, Vol. 26, no. 4, Apr. 1953, Warszawa)

SO: Monthly List of <sup>East European</sup> ~~Russian~~ Accessions / Vol. 3, No. 2, Library of Congress, February, 1954 ~~1953~~, Uncl.

ANKIEWICZ, A.

A substitute method of manufacturing multiedged conical evolvent  
axles. P. 50 MECHANIK Warszawa (Stowarzyszenie Inz nierow i  
technikow Mechanikow Polskich) Vol. 28, no. 2, February 1955

SOURCE: EEAL IC Vol. 5, no. 7, July 1956

AKIEWICZ, A.

AKIEWICZ, . . . Modern worm-gearred milling machines with exchangeable cutters. p.245.  
Vol. 29, no. 7, July 1956. MECHANIK. Warszawa, Poland.

SOURCE: EAST EUROPEAN ACCESSIONS LIST (EEAL) VOL 6 NO 4 APRIL 1957



AKRIS 100, 1.

New design of gear cutters. p. 257.

MECHANIK. Warszawa, Poland. Vol. 12, nos. 1-2, 7-9, 12; Jan.-Feb., July-Sept.,  
Dec. 1957.

Monthly List of East European Accessions (MEMJ) IV, Vol. 2, no. 2, Feb. 1960.  
Encl.

ANKIEWICZ, A.

Machine tools at the 1956 Brno Exhibition. p. 74.  
(MECHANIK. Poland, Vol. 30, No. 2, Feb. 1957)

SO: Monthly List of Fact European Accessions (EFAL) LC, Vol. 6, no. 7, July 1957, Uncl.

ANKIEWICZ, A. ; KUNSTETTER, B.

Present condition of the tools made from carbides.

P. 10. (MECHANIK) (Warszawa, Poland) Vol. 31, no. 1, Jan. 1958

SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

ANKIEWICZ, Andrzej, inż.

New design of face milling cutters. Mechanik 35 no.10:580-582  
0 '62.

1. Koprotech, Warszawa.

*Handwritten text, possibly a name or title.*

*Faded handwritten text, possibly a date or location.*

*Faded handwritten text, possibly a name or title.*

SECRET, Subject: [redacted]

Completed by [redacted] on [redacted]  
39 Dec 1967-68 by [redacted]

1. [redacted] [redacted] [redacted] [redacted]  
(Information, ref. to, test, [redacted])

L 05215-01 En1(1)

ACC NR: AP7000765

SOURCE CODE: UR/0143/66/000/005/0040/0045

AUTHOR: Ankhimyuk, V. L. (Docent; Candidate of Technical Sciences); Il'in, O. P. (Docent; Candidate of Technical Sciences); Sheyna, G. P. (Engineer)

ORG: Belorussian Polytechnic Institute (Belorusskiy politekhnicheskiy institut)

40  
B

TITLE: Selection of motors for electric drives with frequency control at constant power

29

SOURCE: IVUZ. Energetika, no. 5, 1966, 40-45

TOPIC TAGS: electric motor, frequency control

ABSTRACT: A method is analyzed for selecting a motor for a system of frequency controlled drive in the  $P_c = \text{const}$  operating regime. The method is based on the condition of production of a minimal size motor, in consideration of the problem of determining the frequencies at which the fixed range of control and power can be provided with series produced asynchronous motors. The authors call for development of technical conditions or state standards with respect to permissible values of voltage, current and rotation rate of series produced asynchronous motors used in frequency controlled electrical drive systems. An example of the calculation is presented. Orig. art. has: 19 formulas.

[JPRS: 37,061]

SUB CODE: 09 / SUBM DATE: 17May65 / ORIG REF: 006

Card 1/1 *gd*

UDC: 62-83-531.6

0123 1945

COUNTRY : USSR  
CATEGORY : Farm Animals. 9  
          : The Honeybee.  
REF. CODE : ZHURNAL, No. 6, 1959, No. 25935  
AUTHOR : Ankinovich, G.; Dem'yanova, I.; Samarkin, I.  
LIST : "  
TITLE : Some Practices of Taking Bees Out to Gather  
          Honey.  
ORIG. PUB. : Pchelovedstvo, 1958, No 7, 22-26  
ABSTRACT : In an industrial experiment lasting several  
          years it was established that natural swarming  
          during the time of the main honey collection  
          does not impede obtaining high honey yields.

REF. CODE

38



ANKINOVICH, G.E.

KURENKIN, N.M., kandidat biologicheskikh nauk; ANKINOVICH, G.E.,  
zaveduyushchiy uchebno-opytney bazekoy.

Bees and the seed quality of acorns. Izv.TSKhA no.7:234-237 '57.  
(MLKA 10:9)

(Bees) (Acorns)

ANKINOVICH, S.G., kand.geologo-mineral.nauk.

Disharmonic folding in the north-western Kara-Tau bituminous shale horizon. Sbor.nauch.trud. KazGMI no.14:29-33 '56.

(MIRA 10:10)

(Kara-Tau--Geology, Structural)  
(Bituminous materials)

ANKINOVICH, Ye.A., kand.geologo-mineralogicheskikh nauk; ANKINOVICH, S.G.,  
kand.geologo-mineralogicheskikh nauk

Composition of the vanadium-bearing horizon in the Kara-Tau.  
Sbor.nauch.trud.KazGMI no.18:49-68 '59. (MIRA 15:2)  
-- (Kara-Tau--Vanadium)

SHADRINA, V.A.; ANKINOVICH, S.G., dotsent

Ilvaite in skarns of the Inya iron-ore deposit. Sbor. nauch. trud.  
Kaz Gid no.19:171 '60. (MIRA 15:3)  
(Tigiretskiy Range--Ilvaite)

ANKINOVICH, Stepan Gerasimovich; SHLYGIN, Ye.D., prof., doktor geologo-mineralog. nauk, otv. red.; RZHONDKOVSKAYA, L.S., red.; ALFEROVA, P.F., tekhn. red.

[Lower Paleozoic of the vanadium-bearing basin in the northern Tien-Shan and the western margin of central Kazakhstan] Nizhnii paleozoi Vanadienosnogo basseina Severnogo Tian'-Shania i zapadnoi okrainy Tsentral'nogo Kazakhstana. Alma-Ata, Izd-vo Akad. nauk Kazahskoi SSR. Pt.1. 1961. 270 p. (MIRA 14:9)

1. Institut geologicheskikh nauk AN Kazahskoy SSR (for Ankinovich).  
(Kazakhstan--Vanadium)                      (Tien Shan--Vanadium)

BOX, Ivan Ivanovich; BORUKAYEV, R.A., akademik, glav. red.;  
ANKINOVICH, S.G., doktor geol.-miner. nauk, otv. red.;  
NESTEROVA, I.I., red.; KOVALEVA, I.F., red.

[Ores of agricultural importance; fundamentals of their  
geology and their prospecting and evaluation indicators]  
Agronomicheskio rudy; osnovy ikh geologii i poiskovo-  
otsenochnye priznaki. Alma-Ata, Nauka, 1965. 305 p.  
(MIRA 18:9)

1. Akademiya nauk Kaz.SSR (for Borukayev).

ANKINOVICH, YE. A.

"New Mineral Kurumsakite," Izv. AN KazakhSSR, No 134, ser. geol.,  
No 18, 116-117, 1954

In the horizon of the bituminous shales in northwest Karatau has been observed a mineral which is encountered exclusively in the oxidation zone and, as a rule, is said to be not less than 10 meters from the surface. The mineral, named kurumsakite, after the place of its location, is encountered in the walls of cavities and crevices in the form of greenish-yellow and bright-yellow fine crystalline powders of a divergent (radial) and felted structure; partially it forms very fine plates in the shape of elongated hexagons.

RZhGeol, No 1, 1955

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 7,  
pp 95-96 (USSR) 15-57-7-9402

AUTHOR: Ankinovich, Ye. A.

TITLE: Shteygerit (?) in the Bituminous Shales of the  
Northwestern Kara-Tau (Shteygerit v bituminoznykh  
slantsakh Severo-Zapadnogo Karatau)

PERIODICAL: Sb. nauch. tr. Kazakhsk. gorno-metallurg. in-t, 1956,  
Nr 13, pp 77-79

ABSTRACT: Shteygerit has been identified in association with a  
group of colloidal minerals in the oxidized zone of  
one of the Cambrian horizons, in places where alter-  
ation has been most intense. The microscope shows  
the mineral to consist of an aggregate of matted,  
fibrous, very fine crystals of a clear yellowish-  
green color. The size of separate individuals does

Card 1/2



ANKINOVICH, Ye.A.

Diadochite from vanadium-bearing shales in the northwestern  
Kara-Tau. Izv.AN Kazakh.SSR.Ser.geol. no.3:79-83 '58.  
(MIRA 12:1)

(Kara-Tau--Diadochite)

ANKINOVICH, Ye. A., kand. geologo-mineralogicheskikh nauk; ANKINOVICH, S. G.,  
kand. geologo-mineralogicheskikh nauk

Composition of the vanadium-bearing horizon in the Kara-Tau.  
Sbor. nauch. trud. KazGMI no. 18:49-68 '59. (MIRA 15:2)  
(Kara-Tau--Vanadium)

ANKINOVICH, Ye.A., dotsent, kand.geologo-mineralogicheskikh nauk

"Gutsevichite" a new mineral. Sbor.nauch.trud.KazGMI  
no.18:125-130 1959. (MIRA 15:2)

(Kara-Tau--Minerals)

ANKINOVICH, Ye.A.

Satpaevite and alvanite, new vanadium minerals. Zap.Vses.  
min.ob-va 88 no.2:157-164 '59. (MIRA 12:8)

1. Institut geologicheskikh nauk AN KazSSR.  
(Vanadium)

ANKINOVICH, Ye.A.; SILANT'YEVA, N.I.

Gorceixite from vanadium-bearing clay-anthraxolite schists of  
Kazakhstan. Izv. AN Kazakh. SSR. Ser. geol. no.3:78-81 '59.  
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AUTHORS Arkhimenov, V. N. Zlatovskiy, L. F.

TITLE Calculation of the Overall Stability of Hydrotechnical Structures According to the Limiting State Method (Raschet obshchey ustoychivosti gidrotekhnicheskikh sooruzheniy po metodu preelozhennogo sostoyaniya)

PERIODICAL *Tekhnicheskaya mekhanika*, 1957, No. 2, pp. 40-44

ABSTRACT The method of circular cylindrical slip surfaces is used to substantiate the calculation of the overall stability of hydrotechnical structure foundations. The essence of this method consists in determining a stability coefficient as the criterion of the overall stability. This stability coefficient is obtained from the quotient of the moments of the forces resisting the upsetting of the structure and the upsetting forces both relative to the center of the arc of slip passing through the foundation. A comparison is made of this method and the method of calculating the overall stability of foundations according to the limiting state proposed by D. Ye. Pol'shin and R. A. Tokar' [Prilozheniya]

Card 1/2



Calculation of the Overall Stability of Hydrotechnical Structures (cont.)

SOV 124 58 10 11596

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Card 2/2

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(Molybdenum--Analysis)

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no.1:6-7 Ja '62. (MIRA 15:2)  
(Communist Party of the Soviet Union--Congresses)  
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PETRASHEN', V.I.; ANKUDIMOVA, Ye.V.; AGA-INSKAYA, N.A.

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Effect of the verticity of external flow and of the curvature  
of a body on the flow in a boundary layer. Inzh. zhur. 2  
no. 4: 262-268 '62. (MIRA 16:1)

(Boundary layer)

L 2474-66 EWT(d)/EWT(1)/EWP(e)/EWP(f)/EWP(g)/EWP(h)/EWP(i)/EWP(j)/EWP(k)/EWP(l)/EWP(m)/EWP(n)/EWP(o)/EWP(p)/EWP(q)/EWP(r)/EWP(s)/EWP(t)/EWP(u)/EWP(v)/EWP(w)/EWP(x)/EWP(y)/EWP(z)  
 EWT(m)/EWT(w)/EWP(e)/EWP(k)/FCS(k)/EWP(o)/EWA(1) UR/GR08/057 95/000 9900/0966  
 517.9:533.7  
 60  
 58  
 13

ACCESSION NR: AP5025121  
 IG/WW/EA/RM  
 AUTHOR: Ankudivov, A. I. (Moscow)

TITLE: Results from calculation of the boundary layer on blunted cones in supersonic flow  
 SJUDZB. Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 5, no. 5, 1967, 960-966

TOPIC TAGS: supersonic flow, compressible flow, boundary layer, stagnation point, Mach number, specific heat capacity, Prandtl number, friction coefficient

ABSTRACT: The results from numerical calculations of the boundary layer on blunt bodies with spherical bluntness in supersonic gas flows are presented in the case of constant wall temperature and of a thermally insulated wall. An analytical procedure is outlined for integrating a system of differential equations describing an axisymmetric flow of compressible gas in the boundary layer under the assumptions of constant Prandtl number and constant specific heat capacity. The dependence of the viscosity coefficient on temperature is of the form defined by Sutherland. The system is considered under two sets of boundary conditions corresponding to a given

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ACCESSION NR: AP5025121

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wall temperature and thermally insulated surface, respectively. Calculations were carried out for spherically blunted cones with semiapex angles  $\omega = 10^\circ$  and  $30^\circ$ , with wall temperatures  $T_w = 1000, 1500, \text{ and } 2000\text{C}$  and also for cones with thermally insulated walls in supersonic flows at  $M = 6$ , free stream temperature  $T_\infty = 288\text{C}$ , and  $Pr = 0.7$ . The distributions of nondimensional values of: 1) the local friction coefficient  $\tau$ ; 2) the specific heat fluxes  $q$ ; 3) the displacement thickness  $h_1$  on the wall with respect to the distance  $s$  from the stagnation point, are plotted for various values of  $T_w$ ; and 4) the relative temperature  $T_w$  on a thermally insulated wall. Orig. art. has: 10 figures and 6 formulas. [AB]

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OTHER: 000

ATD PRESS: 4/105

BVK.

Card 2/2

ANKUDINOV, A. M.

ANKUDINOV, A. M. "Heart Rot of Aspen and its Control," Trudy Vsesoiuznogo Nauchno-Issledovatel'skogo Instituta Lesnogo Khozjaistva.

vol. 7, 1939, pp. 3-67. 99.9 L54

SO: SIRA, SI 90-53, 14 Dec. 1953



ANKUDINOV, A. M. "

ANKUDINOV, A. M. "On the Heart Rot of Aspen," Trudy Vsesoiunogo Nauchno-Issledovatel'skogo Instituta Lesnogo Khozjaistva, no. 1, 1939, pp. 75-77. 99.9 L54

SO: SIRA, SI 90-53, 15 Dec. 1953

АНКУДИНОВ, А. М.  
R of A.M.

АНКУДИНОВ (А. М.). Сердцевидная гниль осины и меры борьбы с ней. [Heart rot of Aspen and its control.]—Труд. Всесоюз. Научноисследов. Инст. Лес. Хоз. Витк.ЛХ. [Trans. U.S.S.R. Inst. For. Res.], vii, pp. 3-67, 1939. [Abstr. in For. Abstr., vii, 2, p. 221, 1945.]

This is an expanded account of studies on heart rot of aspen (*Populus tremula*), a widely distributed forest tree in the U.S.S.R., caused by *Fomes igniarius*, already noticed from another source (*R.A.M.*, xix, p. 373).

29 AM

АНКОЛИНОВ, Н. П.

P. g AM

Анколинский (А. М.). Септориальная гниль Осеню. [Heart rot of Aspen.] — Труды Космонавтов [Forest Husbandry], 1939, 8, pp. 43-49, 4 figs., 1939.

In a study on the heart rot of aspen caused by *Fomes sylvaticus* [R. & M., x, p. 416; xvii, p. 214], conducted during 1937-8 in the U.S.S.R., special attention was given to the red (pink to purple-brown) discoloration of the heart which usually occurs to a small extent during the first year of growth, but within five years is encountered in every tree of the stand, affecting over 70 per cent. of the stem length. True heart rot, on the other hand, is not observed at all in trees under five years old, and only in individual trees from 5 to 23. Isolations from 234 samples of discoloured aspen wood of all ages in no case yielded *F. sylvaticus*; 129 samples yielded sterile cultures, and 91 several saprophytic fungi, including *Verticillium* spp., particularly one resembling *F. rostratum*, *Sclerotium* spp., *Torenia* spp., *Macrosporium* sp., and *Tremula* sp. Following artificial infection with *F. sylvaticus* wood of felled aspen developed heart rot rapidly (after six months) and that of growing aspen slowly (after three years), but in neither case did the red discoloration develop. It is concluded that this condition is not due to parasitic fungal attack and does not, as previously suggested, represent the first stage of heart rot. The main factor causing red discoloration in aspens up to three years old appeared to be mechanical injury to the stems, caused either by men, saprophytic fungi, or insects, and in older ones the unhealed dead twigs. Essential for the control of both this disorder and heart rot proper is the choice of a suitable, preferably low-lying site with a rich, not sandy soil with a plentiful supply of ground water, good care of the stands, avoiding mechanical injury to the stems, removal of injured trees and sources of infection in young stands, thinning in older ones, and pruning of dead twigs.

ANKUDINOV, A.

By first completing preparatory operations. Na stroi. Ros.  
nc.6:6-9 Je '61. (MIRA 14:7)

1. Upravlyayushchiy trestom Magnitostroy.  
(Earthwork) (Foundations) (Magnitogorsk--Rolling mills)