SOV/20-121-1-50/55

AUTHORS: Rakitin, Yu. V., Krylov, A. V.,
Garayeva, K. G., Geyden, T. M.

TITLE: The Influence of Various Chemical Preparations Upon the Germination of Stored Potato Tubers (Vliyaniye razlichnykh khimicheskikh preparatov na prorastaniye klubney kartofelya pri khranenii)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 1, pp. 175 - 178 (USSR)

ABSTRACT: In the course of the last years chemical inhibitors of the germination of potato tubers have been sought (Refs 1-7). The methyl ether of the α-naphthylacetic acid turned out to be most favorable in this connection. In the case of edible potatoes it is already used to a great extent (Refs 8,9). In the present paper the results of a comparison of 27 preparations is given which belong to various classes of chemical compounds. All preparations were put at the authors' disposal by N.N.Mel'nikov, Yu.A.Baskakov and K.S.Bokarev. The inhibitors were used as powder, with loam as diluent (3 g per 1 kg tubers). Most of them were checked in 2-3 doses of

Card 1/3

The Influence of Various Chemical Preparations Upon the Germination of Stored Potato Tubers

SOV/20-121-1-56/55

different amount. The sort "Lorkh" served as experimental potato. Table 1 shows that the compounds of similar structure differ to a great extent in their effect on the tuber. The most active inhibitors of the germination were : the isopropyl ether of the phenyl-carbamic acid and the above mentioned methyl ether. The first substance in a dosis of 25 mg/kg suppressed the germination completely, the second in a quantity of 50 - 100 mg/kg suppressed the process to a great extent. Both inhibitors reduced the physiological and the total losses in weight. The tubers treated with these inhibitors did not produce **offshoot** tubers. Both inhibitors were recommended for practical use (Refs 2,3,6): the first for the technical potato (Refs 5,7), the second for the **edible** potato (Refs 6,8,9). β-naphthoxy acetic acid practically did not inhibit germination. All other substances inhibited this process more or less. Several preparations were found which inhibit to a great extent the germination, lead, however, to the formation of **offshoot** tubers. The greatest formation of **offshoot** tubers was observed in the case of methyl and ethyl ether of the phenyl-carbamic acid. The

Card 2/3

The Influence of Various Chemical Preparations Upon the Germination of Stored Potato Tubers SOV/20-121-1-50/55

comparison of the varieties with formation of offshoot tubers showed that their formation is to a certain degree reversely dependent on the length of the germs. There are 1 table and 9 references, 6 of which are Soviet.

ASSOCIATION: Institut fiziologii rasteniy im.K.A.Timiryazeva Akademii nauk SSSR(Institute of Plant Physiology imeni K.A.Timiryazev, AS USSR)

PRESENTED: April 1, 1958, by A.L.Kursanov, Member, Academy of Sciences, USSR

SUBMITTED: February 27, 1958

1. Potatoes--Physiology 2. Potatoes--Storage 3. Seeds--Viability 4. Chemical compounds--Physiological effects 5. Chemical compounds --Test results

Card 3/3

RAKITIN, Yu.V.; GEYDEN, T.M.

Reducing premature apple and pear drop in the Crimea. Fiziol. rast. 6 no.4:484-486 Jl-Ag '59. (MIRA 12:10)

1.K.A. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.

(Crimea--Fruit culture)
(Plants, Effect of naphthaleneacetic acid on)
(Plants, Effect of propionic acid on)

RAKITIN, Yu.V.; KRYLOV, A.V.; GEYDEN, T.M.; GARAYEVA, K.G.

Inhibiting the sprouting of tubers in different potato varieties during prolonged storage. Fiziol. rast. 6 no.4:500-503 Jl-Ag '59.
(MIRA 12:10)

1.K.A. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.
(Potatoes--Storage) (Plants, Effect of naphthaleneacetic acid on)

RAKITIN, Yu.V.; GEYDEN, T.M.

Chloro-IPC as an effective means of controlling the weed Stellaria media. Fiziol. rast. 7 no.2:232-234 '60. (MIRA 14:5)

1. K. A. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.

(Carbanilic acid)
(Herbicides)
(Chickweed)

RAKITIN, Yu.V.; BOKAREV, K.S.; KRAFT, V.A.; RAKITINA, Z.G.; GEYDEN, T.M.
GURVICH, S.M.

New defoliants and desiccants for cotton. Fiziol. rast. 8
no.4:506-511 '61. (MIRA 14:11)

1. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy
of Sciences, Moscow.
(Cotton)
(Defoliation)

5(4)

AUTHORS: Vasil'yeva, V. N., Bazov, V. P., Geyderikh, M. A.

SOV/76-33-7-11/40

TITLE: Spectra and Dipole Moments of the p-Derivatives of Dimethyl Aniline

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1516 - 1520 (USSR)

ABSTRACT: In continuation of a previous paper (Ref 1) the authors investigated the spectra and dipole moments of a number of para-derivatives of dimethyl aniline with electronegative substituents. If there is an electronegative substituent as X in the molecule $X\cdot C_6H_4\text{-}NR_2$ ($R = CH_3$), there occurs usually an additional shift of electrons from NR_2 toward X, which results in an increase of the dipole moment. The effect of the substituent on the optical properties is closely connected with their effect on the position and intensity of the absorption bands in the ultraviolet spectrum. The following data is given (Table): The position of the intense absorption bands of the compounds C_6H_5X and $R_2N\cdot C_6H_4\cdot X$; absorption curves plotted by

Card 1/3

Spectra and Dipole Moments of the p-Derivatives of Dimethyl Aniline SOV/76-33-7-11/40

means of the photoelectric spectrophotometer SF-4 (Figs 1-3); exaltation of molecular refraction in $R_2N \cdot C_6H_4 \cdot X$ (with respect to that of PhX and $PhNR_2$); molar coefficients of the integral intensity of Raman-spectrum lines; dipole moments of the compounds $R_2N \cdot C_6H_4 \cdot X$. Individual data on the methods of determination was already given (Ref 2). The above data indicates that the influence exercised by the dimethyl amine group upon the properties of the molecules under investigation has the same nature: there occurs an approach and intensification of the absorption band, increase in the exaltation, refraction, and intensity of Raman-spectrum lines, decrease in the frequency of group X, and increase in the dipole moments (from NR_2 to X) to a larger extent than would correspond to an additive scheme. Compounds with groups of the highest degree of electronegativity (NC_2, NO, CHO) are most strongly influenced by the NR_2 group. However, the authors did not find any specific relation between the individual influences. In conclusion, they thanked

Card 2/4

Spectra and Dipole Moments of the p-Derivatives of Dimethyl Aniline SOV/76-33-7-11/40

P. P. Shorygin for his assistance. There are 3 figures, 1 table, and 5 references, 3 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova. Akademiya nauk SSSR (Physicochemical Institute imeni L. Ya. Karpov, of the Academy of Sciences, USSR). Institut organicheskoy khimii (Institute of Organic Chemistry)

SUBMITTED: December 14, 1957

Card 3/3

5 (3) SOV/20-128-2-25/59

AUTHORS: Topchiyev, A. V., Academician, Geyderikh, M. A., Davydov, B. E., Kargin, V. A., Academician, Krentsel', B. A., Kustanovich, I. M., Polak, L. S.

TITLE: On the Possibility of Producing Polymeric Materials With Semiconductor Properties From Polyacrylnitrile

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 2, pp 312-315 (USSR)

ABSTRACT: It is difficult to produce organic substances with electronic conductivity since the admitted zones, if they develop at all, are narrow here, whereas the forbidden zones are very wide. This width is so considerable that no electron excitation is caused at temperatures at which the substance concerned is not yet decomposed. The semiconductor properties of the substances described in publications are usually connected with existing condensed aromatic rings and nitrogen atoms (Ref 1). Current carriers are bound to develop comparatively easily in polymers with double bonds, especially with conjugated double bonds, furthermore with atoms in the chain which have electrons on the outer levels that do not take part in the chemical bond (e.g. nitrogen atoms). The electron dispersion in the latter is bound to be low in the case of a sufficiently regular polymer

Card 1/3

structure. The necessary regularity degree can be approximately estimated from the length of the free path of the electron in the semiconductor, furthermore from the length of the C—C-bonds, the length of the monomeric member, and the length of the electron wave. It was found that one polymeric molecule is sufficient in the main chain of which exists no branching with more than 12 carbon atoms per 45 monomeric members. This holds in the case of a fiber with maximum elongation in which the polymeric molecules are arranged in the direction of the current. Then, no dispersion on the structural irregularities is to be expected. The production of polymers with such a degree of regularity is well possible today. An investigation of the products of thermal transformation of polyacrylnitrile is interesting from the above standpoint. The view of the transformations proceeding here is explained by a scheme. Table 1 gives the results of measurement of the paramagnetic electron resonance of the polymers at room temperature. The method and the device used for this purpose are described in reference 3. From the data given in table 1 it follows that: (1) the semiconductors obtained exhibit good electronic

On the Possibility of Producing Polymeric Materials With SOV/20-128-2-25/59
Semiconductor Properties From Polyacrylnitrile

conductivity ($\Delta g<0$). (2) The concentration of current carriers amounts to 10^{18} - 10^{19}; the degeneration is therefore inconsiderable. (3) The half-width of the spectra of the paramagnetic electron resonance characteristic of the relaxation duration amounts to 10-20 gauss. Figure 1 shows the dependence of electrical conductivity on temperature for polyacrylnitrile which was obtained by a redox initiation and subjected to thermal transformation. The materials produced on the basis of polyacrylnitrile have properties typical of semiconductors, and may be used at increased temperatures (Fig 1). The influence of a γ-radiation on the polymer renders the subsequent thermal treatment still more effective with respect to the production of semiconductors. There are 1 figure, 2 tables, and 5 references, 3 of which are Soviet.

SUBMITTED: July 16, 1959

Card 3/3

5.3100

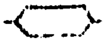
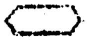
65849

AUTHORS: Shorygin, P. P., Geyderikh, M. A., Ambrush, T. I.

S/076/60/034/02/011/044
B010/B015

TITLE: The Effect of Substituents on the Properties of Aromatic Nitriles and Sulfones

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 2, pp 335-342 (USSR)

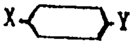
ABSTRACT: The Raman spectra, ultraviolet absorption spectra, and dipole moments of the para-derivatives of benzonitrile and methylphenylsulfone were examined and compared. The frequency values of the -C.N-group valence oscillation of the para-derivatives of the benzonitrile Raman spectrum, of the coefficients of integral intensity I_{CN} of the CN line in the Raman spectrum, of the intensity i_{CN} of the CN absorption band in the infrared spectrum, of the wave lengths of the most important maxima of the intensive absorption bands in the ultraviolet spectrum (measured with the SF-4 spectrophotometer), and the dipole moments (measured by V. N. Vasil'yeva and Z. S. Yegorova in benzene and dioxane) are shown by table 1. Table 2 shows the frequency difference of the groups Y in the molecule X --Y and -Y (Y = NO_2, COR, CN, SOOR, OH), as well as the corresponding wave length difference $\Delta\lambda$ of the

Card 1/3

68849

The Effect of Substituents on the Properties of Aromatic Nitriles and Sulfones

S/076/60/034/02/011/044
B010/B015

absorption bands, and the difference between the measured dipole moment for  and the vector sum of the moments for  and  $\Delta\mu$. The effect of substituents exerted on the investigated properties of the nitro compounds, ketones, nitriles, and sulfones is of the same character. The order of substituents (corresponding to the effect on the mentioned properties) is approximately the same for the four types of compounds mentioned. In this respect, sulfones do not differ from nitro compounds. The effect of substituents is, however, strongest with nitro compounds, and weakest with sulfones (Table 2). The electropositive substituents reduce the frequency of NO_2, CN, CO, and SO_2, increase, however, that of OH. The OR group influences the optical properties of the compounds investigated more strongly than the OH group whereas the dipole moments and dissociation constants of phenols and acids are more strongly influenced by the OH group. The assumption put forward in publications that the SO_2 group is incapable of forming a conjugation is unfounded. The difference in the I_{CN} values of some nitriles is in qualitative agreement with the difference in the i_{CN} values. V. A. Petukhov took some of the

68849

The Effect of Substituents on the Properties of Aromatic Nitriles and Sulfones

S/076/60/034/02/011/044
B010/B015

absorption spectra. There are 2 figures, 3 tables, and 9 references, 2 of which are Soviet.

ASSOCIATION: Institut organicheskoy khimii AN SSSR (Institute of Organic Chemistry of the AS USSR)

SUBMITTED: April 26, 1958

Card 3/3

GEYDERIKH, M.A.

PHASE I BOOK EXPLOITATION SOV/4984

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simpozium po makromolekulyarnoy khimii SSSR, Moskva, 14-18 iyunya 1960 g.; doklady i avtoreferaty. Sektsiya III. (International Symposium on Macromolecular Chemistry Held in Moscow, June 14-18, 1960; Papers and Summaries) Section III. [Moscow, Izd-vo AN SSSR, 1960] 469 p. 55,000 copies printed.

Tech. Ed.: P. S. Kashina.

Sponsoring Agency: The International Union of Pure and Applied Chemistry. Commission on Macromolecular Chemistry.

PURPOSE: This book is intended for chemists interested in polymerization reactions and the synthesis of high molecular compounds.

COVERAGE: This is Section III of a multivolume work containing papers on macromolecular chemistry. The articles in general deal with the kinetics of polymerization reactions, the synthesis of special-purpose polymers, e.g., ion exchange resins, semiconductor materials, etc., methods of catalyzing polymerization reactions, properties and chemical interactions of high molecular materials, and the effects of various factors on polymerization and the degradation of high molecular compounds. No personalities are mentioned. References given follow the articles.

Geyderikh, M.A.

3

11400

5.1190 2209.1208.1297 S/020/61/137/004/025/031
B101/B208

AUTHORS: Dokukina, Ye.S., Roginskiy, S.Z., Corresponding Member AS USSR, Sakharov, M.M., Topchiyev, A.V., Academician, Geyderikh, M.A., Davydov, B.E., and Krentsel', B.A.

TITLE: Catalysis on organic semiconductors obtained by heat treatment of polyacrylonitrile

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 4, 1961, 893- 895

TEXT: It could be assumed on the basis of the bibliography and the generally accepted concept of the catalytic mechanism that organic semiconductors with small forbidden band width and considerable electrical conductivity at room temperature should be active catalysts in redox reactions. Only qualitative data being available so far, it was the purpose of this study to investigate the catalytic activity of polymer semiconductors containing a system of conjugate bonds on redox reactions in the gaseous and vapor phases. The authors have chosen semiconductors from polyacrylonitrile (PAN). Data on preparation and electrical properties of this material are given in Ref. 7 (A.V. Topchiyev, M.A. Geyderikh et al.,

Card 1/5

DAN, 128, 312 (1959)), and have been reported by M.A. Geyderikh at the International Symposium on Macromolecular Chemistry on June 14 - 18, 1960. Two PAN samples were used: PAN-1 to which 0.01% $CuCl_2$ was added prior to heat treatment, and which had a specific surface of 0.06 m^2/g (determined by means of krypton), and PAN-2 without copper admixture and with a specific surface of 0.04 m^2/g. Catalytic activity was studied in an apparatus similar to that of G.M. Schwab, N. Theophilides (Ref. 1), see below. The catalysts were annealed at 450°C for 1-3 hr prior to the experiment. Considerable catalytic activity was only observed in the decomposition of formic acid. Experimental data are given in Table 1. The copper admixture was found to be of minor importance. As the change of the decomposition rate v of HCOOH was determined by the continuous method on a stepwise rise of temperature, a constant rate of acid addition, and a low degree of conversion (1 - 10%), the activation energy could be calculated from $\log v = f(1/T)$. It was 21 kcal for PAN-1, and 25 kcal for PAN-2. The catalytic activity of the samples increased from experiment to experiment until it reached a constant value. Activation energy, however, remained nearly constant. A catalytic action of PAN on the decomposition of hydrazine hydrate in NH_3 and N_2 was observed only at high temperatures (250°C) at which the reaction on the glass surface of the vessel and homogeneous decomposition play an important role. The specific activity of PAN with respect to the decomposition of HCOOH is explained by its chemical structure. The N-atoms in the chain of the conjugate bonds are assumed to act as adsorption centers for the acid molecules. By changing the chemical and electrophysical properties of polymers with conjugate double bonds, highly selective catalysts should be obtained which are comparable to those used in fermentative catalysis. This is the reproduction of a report delivered by S.Z. Roginskiy, Corresponding Member AS USSR, before the Uchenyy Sovet Instituta khimicheskoy fiziki Akademii nauk SSSR (Scientific Council of the Institute of Chemical Physics of the Academy of Sciences USSR) on May 27, 1960. Mention is made of A.A. Berlin, L.A. Blyumenfel'd, N.N. Semenov (Ref. 11: Izv. AN SSSR, OKhN, <u>1959</u>, no. 9, 1669). There are 1 figure, 2 tables, and 14 references: 8 Soviet-bloc and 6 non-Soviet-bloc. The 3 references to English language publications read as follows: K. Tamaru, T. Shimada, Bull. Chem. Soc. Japan, <u>31</u>, 141, (1958); D.D. Eley, Res. appl. Ind. <u>12</u>, 293 (1959); G.M. Schwab, N. X

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S/020/61/137/004/025/031
B101/B208

Catalysis on organic...

Theophilides, J. phys. Chem., 50, 427 (1946).

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences USSR). Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR)

SUBMITTED: December 24, 1960

Card 5/5

SHORYGIN, P.P.; GEYDERIKH, M.A.; AMBRUSH, T.I. (Moskva)

Effect of substituents on the properties of aromatic nitriles and sulfones. Zhur. fiz. khim. 34 no.2:335-342 F '60. (MIRA 14:7)

1. Institut organicheskoy khimii AN SSSR.
(Nitriles) (Sulfones)

DOKUKINA, Ye.S.; ROGINSKIY, S.Z.; SAKHAROV, M.M.; TOPCHIYEV, A.V.; akademik; GEYDERIKH, M.A.; DAVYDOV, B.E.; KRENTSEL', B.A.

Catalysis on organic semiconductors obtained from polyacrylonitrile by thermal treatment. Dokl. AN SSSR 137 no.4:893-895 Ap '61.
(MIRA 14:3)

1. Institut fizicheskoy khimii AN SSSR i Institut neftekhimicheskogo sinteza AN SSSR. 2. Chlen-korrespondent AN SSSR (for Roginskiy).
(Acrylonitrile)(Semiconductors)(Catalysts)

ACCESSION NR: AP4042880 S/0062/64/000/007/1328/1330

AUTHOR: Ayrapetyants, A. V.; Vlasova, R. M.; Geyderikh, M. A.; Davy*dov, B. E.

TITLE: Study of the electric properties of polyacrylonitrile during heat treatment

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 7, 1964, 1328-1330

TOPIC TAGS: polyacrylonitrile, polyacrylonitrile heat treatment, polyacrylonitrile pyrolysis, polyacrylonitrile electric properties, polyacrylonitrile electric conductivity, ionic conductivity component, electronic conductivity component, carrier, carrier effective mobility, carrier concentration

ABSTRACT: Changes in the electric properties of polyacrylonitrile during heat treatment at 100—145C have been studied by determining the changes in conductivity and thermoelectric force. In addition, in the course of the pyrolysis IR spectra were studied, and the thermal degradation of the polymer was evaluated by weight loss. The results

Card 1/2

ACCESSION NR: AP4042880

indicate that the electric conductivity of the products of the thermal conversion of polyacrylonitrile consist of an ionic and an electronic component. The ionic component, which causes the conductivity of the initial polymer, prevails in specimens treated at 150—300C; it decreases with an increase in the temperature of the heat treatment. The electronic component increases with an increase in the heat-treatment temperature, owing to an increase in the number of conjugate double bonds. The conductivity increases during the heat treatment at 400C; this increase is due to an increase of the effective mobility of carriers rather than to an increase in their concentration. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Institut poluprovodnikov AN SSSR (Institute of Semiconductors AN SSSR); Institut neftekhimicheskogo sinteza im. A. V. Topchiyev AN SSSR (Institute of Petrochemical Synthesis AN SSSR)

SUBMITTED: 20Dec63 ATD PRESS: 3066 ENCL: 00

SUB CODE: OC, EM NO REF SOV: 005 OTHER: 000

Card 2/2

DRABKIN, I.A.; ROZENSHTEYN, L.D.; GEYDERIKH, M.A.; DAVYDOV, B.E.

Mechanism underlying the thermal conversion of polyacrylonitrile.
Dokl. AN SSSR 154 no.1:197-199 Ja'64. (MIRA 17:2)

1. Institut poluprovodnikov AN SSSR i Institut neftekhimicheskogo sinteza AN SSSR. Predstavleno akademikom V.A. Karginym.

GEYDERIKH, M.A.; DAVYDOV, B.E.; KRENTSEL', B.A.

Thermal conversion of polyacrylonitrile. Izv. AN SSSR. Ser. khim. no.4:636-643 '65. (MIRA 18:5)

1. Institut neftekhimicheskogo sinteza im. A.V.Topchiyeva AN SSSR.

BEREZKIN, V.G.; GORSHUNOV, O.L.; GEYDERIKH, M.A.

Use of gas chromatography for studying polymer compounds.
Plast. massy no.11:53-57 '65. (MIRA 18:12)

SILIN', E.A. [Silins, E.]; MOTORYKINA, V.P.; SHMIT, I.K. [Smits, I.];
GEYDERIKH, M.A.; DAVYDOV, B.E.; KRENTSEL', B.A.

Structural transformations of polyacrylonitrile under the effect of infrared irradiation. Elektrokhimiia 2 no.1:117-122 Ja '66.
(MIRA 19:1)

1. Latviyskiy gosudarstvennyy universitet i Institut neftekhimicheskogo sinteza AN SSSR, Moskva. Submitted April 27, 1965.

VECHER, A.A.; GERASIMOV, Ya.I.; GEYDERIKH, V.A.

Iron activity in solid solutions of silicon in iron. Zhur.
fiz. khim. 39 no.5:1229-1232 My '65. (MIRA 18:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

AUTHORS: Geyderikh, V. A., Gerasimov, Ya. I., SOV/20-120-6-30/59
Corresponding Member, Academy of Sciences, USSR, Vecher, A. A.

TITLE: Thermodynamics of the Production of the Highest Iron Antimonide
(Termodinamika obrazovaniya vysshego antimonida zheleza)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 6,
pp 1274 - 1276 (USSR)

ABSTRACT: This is an investigation of the production of $FeSb_2$ from the elements according to the reaction $Fe(solid)+2Sb(solid)=FeSb_2$ by means of the e.m.f.method. This was done by investigating the dependence of the e.m.f. of the cell Fe / Fe^{2+}, KCl+LiCl (solution)|$FeSb_2$+Sb upon temperature in the interval 410 6'0°. 12 melts with a varying composition (within the heterogeneous range $FeSb_2$+Sb of the phase diagram of the Fe-Sb system) were investigated. The experimental methods have been described already earlier. The results of all experiments were interpreted by means of the method of least squares. The equation E= 0,1497 - 0,00004 T (in Volts) was found for the function

Card 1/3

Thermodynamics of the Production of the Highest Iron Antimonide SOV/20-120-6-30/59

$E=f(T)$. By means of this equation it is possible to compute the variations of the isobaric-isothermal potential, of enthalpy and of entropy in the production of $FeSb_2$ by means of this reaction: $\Delta Z=-nFE=-6,9+0,0018T$ (kcal/mol), $\Delta H=-6,9\pm 0,4$ (kcal/mol)$=-2,30\pm 0,1$ (kcal/gram atom), $\Delta S=-1,8\pm 0,4$ (kcal/degree.mol)$=0,6\pm 0,1$ (kcal/degree gram atom) Differences between these results and that obtained by other authors and the possible causes for this fact are mentioned Finally the theoretical calculation of ΔZ by means of the equation for the liquidus range of the meltability diagram of the Fe-Sb system is presented. The agreement attained is satisfactory. There are 1 figure and 8 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 1, 1958

Card 2/3

Thermodynamics of the Production of the Highest Iron Antimonide SOV/20-120-6-30/59

1. Antimony-iron systems--Production 2. Antimony-iron systems--Thermodynamic properties 3. Antimony-iron systems--Enetropy 4. Antimony-iron systems--Enthalpy 5. Mathematics--Applications

Card 3/3

5(4)

AUTHORS: Gerasimov, Ya. I., Corresponding Member, SOV/20-122-5-24/56
Academy of Sciences, USSR, Vecher, A.A., Geyderikh, V. A.

TITLE: The Thermodynamic Properties of the Solid Solutions
Cu-Ni and Fe-Co (Termodinamicheskiye svoystva tverdykh
rastvorov Cu-Ni i Fe-Co)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 5,
pp 854 - 856 (USSR)

ABSTRACT: The authors determined the free energy, the heat of formation, and the entropy of formation of the alloys Cu-Ni and also the activity of iron in the alloys Fe-Co by the method of electromotive forces. The electromotive force of the alloys Cu-Ni was measured in a galvanic element: Cu(solid)| Cu$^+$ (melt)CuJ+KJ+NaJ)| Cu-Ni(alloy). The alloys were produced from nickel- and zinc powder by pressing and subsequent annealing(for a duration of up to 100 hours at 1050-1250°C) and were analyzed after the smelting test. The results obtained by these experiments are shown by a diagram. The electromotive

Card 1/4

force was perfectly constant and reproducible within a limit of errors of 1,5 to 2%. From the electromotive force and its temperature dependence the activity (a_{Cu}), the partial relative heat content L_{Cu} and the partial entropy of the mixture of the copper ($\Delta \overline{S}_{Cu}$) were determined for each of the alloys. By means of graphical integration the integral heat and entropy of formation of this system were then found. Formulae are given for the approximated description of the experimental results obtained. The system Cu-Ni forms a continuous series of solid solutions. According to the data given by the authors, the system Cu-Ni furnishes positive deviations from Raoult's (Raul') law, which, however, are less than those for the system Au-Fe and Au-Ni. However, the excess entropy of the mixture (izbytochnaya entropiya smesheniya) of the alloys Cu-Ni are negative. No ordered distribution of atoms in the alloys Cu-Ni could be ascertained by radiographic investigations because the difference with respect to diffrangibility between the copper- and nickel atoms is too small. However, measurements of the electric resistance and the magnetic properties of the copper-nickel alloys indicate the existence of a certain order in them. This ordered state is probably connected with the self-action of the free electrons (valence electrons) of copper and nickel. An ordered state in Cu-Ni-alloys is, according to the authors' opinion, quite possible. The ordered state of the Cu-Ni-alloys exercises considerable influence upon the values of the excess entropy of formation. The highly negative values of the excess entropy (if calculated from relatively low positive heats of formation) give positive excess free energies. The electromotive force increases more rapidly than linearly with increasing temperature. Hence from it follows 1) that with increasing temperature the positive deviations from Raoult's (Raul') law rapidly decrease, and 2) the heat

The Thermodynamic Properties of the Solid Solutions Cu-Ni and Fe-Co SOV/20-122-5-24/56

and the entropy of formation of copper-zinc alloys depends on temperature. Further investigations of the structure of copper-zinc alloys appear to be necessary. The values of the activity of iron in Fe-Co"-Lo-alloys found by the authors are shown by a diagram and agree well with the results obtained by T.S[illegible]ov et al. (Ref 11). There are 4 figures and 11 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova (Moscow State University imeni M.V.Lomonosov)

SUBMITTED: July 1, 1958

Card 4/4

88260

5.4700

S/076/60/034/012/015/027
B020/B067

AUTHORS: Geyderikh, V. A., Vecher, A. A., and Gerasimov, Ya. I.

TITLE: Study of the Thermodynamic Properties of Binary Metal Systems by the Method of Electromotive Force. VI. The System Iron - Antimony in Solid State

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 12, pp. 2789-2794

TEXT: In publications usually the phase diagram for the system iron - antimony which is constructed from data of N. S. Kurnakov and B. P. Konstantinov [Abstracter's note: in the list of publications the name is spelled N. S. Konstantinov] (Ref. 1) is described. For temperatures below 620°C the phase diagram contains the following phases: 1) α-solid solution of antimony in iron; the limits of existence of the α-phase have not been accurately determined; 2) heterogeneous range (α- + ε-phases) with 3 to 42 atom% Sb; 3) ε-phase (42-48 atom% Sb), which in the following is referred to as $Fe_{0.52}Sb_{0.48}$; 4) heterogeneous range (ε-phase + $FeSb_2$)

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Card 1/3

88260

Study of the Thermodynamic Properties of Binary Metal Systems by the Method of Electromotive Force. VI. The System Iron - Antimony in Solid State

S/076/60/034/012/015/027
B020/B067

with 48 to 66.7 atom% Sb, and 5) heterogeneous range ($FeSb_2$ + Sb) with 66.7 to 100 atom% Sb. The authors studied the thermodynamic functions of the reaction taking place in the cell

$$Fe(sol) \mid Fe^{2+} \text{ in melt } KCl + LiCl \mid [Fe - Sb] \text{ sol.alloy} \quad (1)$$

which is based on the transfer of iron from the reference electrolyte (pure iron) to the electrode (iron-antimony alloy). When studying the temperature dependence of emf also the changes of the partial molar entropy and the heat content of the process can be determined. The measurements were made at temperatures of from 400 to 600°C for the alloys of the region $FeSb_2$ + Sb and at 500 to 700° for the alloys of the other regions of the phase diagram. The emf was measured by means of a potentiometer ППТВ-1 (PPTV-1) with a mirror galvanometer М-25-5 (M-25-5); the temperature was determined by a Pt -PtRh thermocouple with an accuracy of ± 1°C. A special thermostat kept the temperature constant at 1-2°C. Each experiment lasted 100 to 120, sometimes even 200 hours. The dependence of

Card 2/3

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Study of the Thermodynamic Properties of Binary Metal Systems by the Method of Electromotive Force. VI. The System Iron - Antimony in Solid State

S/076/60/034/012/015/027
B020/B067

the partial and integral changes of the isobaric - isothermal potentials in the system Fe - Sb at 830°K are given in Figs. 2-4. The values ΔZ (integral change of the thermodynamic potential in the formation of 1 g atom of alloy from Fe and Sb), ΔS and ΔH of the formation of iron antimonides from Fe and Sb are given in Table 1. When determining the accuracy of the data obtained the authors used the maximum deviation of the experimentally obtained points from the calculated values without considering the strongly diverging results. The values of these deviations for all regions of the phase diagram are given in Table 2. N. V. Ageyev, Ye. S. Makarov, and K. Vagner are mentioned. There are 4 figures, 2 tables, and 14 references: 7 Soviet, 3 US, 1 French, and 3 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 28, 1959

Card 3/3

5(4)

AUTHORS: Nikol'skaya, A.V., Geyderikh, V.A., Gerasimov, Ya.I., Corresponding Member, AS USSR

S/020/60/130/05/035/061
B004/B014

TITLE: The Thermodynamic Properties of Indium Antimonide

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 1074-1077 (USSR)

ABSTRACT: In figure 1 the authors show the phase diagram of the In - Sb system and give a complete list of publications dealing with the thermodynamic properties of InSb. This paper is intended to calculate the thermodynamic properties of InSb on the basis of experimental data obtained by means of the electrochemical chain In(liquid) | (KCl-LiCl) + InCl | (InSb + Sb)(solid). The change ΔZ of the isobaric-isothermal potential is, as a result of the reaction In(liquid) + Sb(solid) = InSb(solid), proportional to the emf of the cell. Thus, the investigation of the temperature dependence of the emf also disclosed the temperature dependence of ΔZ. This investigation was therefore carried out in the heterogeneous region of the InSb - Sb system between 390° and 490° using alloys with an antimony content of 59.9%

Card 1/2

The Thermodynamic Properties of Indium Antimonide S/020/60/130/05/033/061
B004/B014

and 67.2%. The authors describe the production of the alloys and InCl. The electric cell is shown in figure 2. Figure 3 contains experimental data. They follow the equation $E = (0.3455 - 0.241 \cdot 10^{-3} T)$v. Enthalpy and entropy of the reaction were calculated herefrom. A comparison of the data found with those obtained by other scientists is given in table 1. Within the limits of error, they agree with the data of reference 4. There are 3 figures, 1 table, and 10 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

SUBMITTED: November 5, 1959

Card 2/2

84672

5.4700 2209, 1360, 1018 only

S/020/60/134/006/015/031
B016/B067

AUTHORS: Gerasimov, Ya. I., Corresponding Member AS USSR, Vasil'yeva, I. A., Chusova, T. P., Geyderikh, V. A., and Timofeyeva, M. A.

TITLE: Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 6, pp. 1350-1352

TEXT: The authors point to the shortcomings in determining thermodynamic functions of the formation of tungsten oxides, and they suggest that another method be used irrespective of the values for water vapor. They chose the method of electromotive force (emf) (Refs. 3-6) which they modified to some degree. The authors carried out their experiments in the vacuum in a special metal cell which was insulated with molten quartz. The solid solution 0.85 ZrO_2 + 0.15 CaO served as electrolyte with anionic conductivity. The authors measured the emf of the cells of

Card 1/4

84672

Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

S/020/60/134/006/015/031
B016/B067

the type $WO_x \mid ZrO_2CaO \mid Fe_{0.95}O$. Fe between 900 and 1230°K, with x = 2.719 (1); 2.66 (2); 2.39 (3); 1.90 (4); 1.69 (5), and 1.45 (6). The oxides of the mentioned composition were produced by reducing the low-temperature modification of WO_3-α (Ref. 2) by means of hydrogen. The first three compositions correspond to a mixture of the phases $WO_{2.72}$ and WO_2, the latter to the mixture WO_2 and W. The mixture $Fe_{0.95}O + Fe$ served as standard electrode. The experimental values of emf of the cells 1. - 3. and 4. - 6. are described by equation (1) and (2), respectively. The combination of the ΔG of the cells (1,2) which were calculated on the basis of a known equation with the ΔG of the formation of $Fe_{0.95}O$ from the elements (data by W. Lange, Ref. 7) yields the following equation for the reaction $1/2\,W + 1/2\,O_2 = 1/2\,WO_2$ (I)

$$\Delta G_1 = -68542 - 7.21\,T\log T + 1.26 \cdot 10^{-3}T^2 - 0.47 \cdot 10^5 T^{-1} + 40.62T$$
(943 - 1230°K).

The values of ΔG_1 between 973 and 1273°K calculated on the basis of this

Card 2/4

84672

Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

S/020/60/134/006/015/031
B016/B067

equation, as well as the values ΔG_1^1 for the reaction (I) for these temperatures which the authors obtained earlier from the equilibrium data (Ref. 2) are shown in Table 1. An equation (II) is introduced for the ΔG_2 of the reaction $100/72\ WO_2 + 1/2\ O_2 = 100/72\ WO_{2.72}$ (900 - 1173°K). The ΔG_2 values between 923 and 1173°K calculated therefrom are given in Table 2. A combination of reaction (I) and/or (II) gives a further equation for the reaction $W + 1.36\ O_2 = WO_{2.72}$ (III). To calculate the standard thermodynamical values, the authors used the thermal capacities of O_2 and of W (Ref. 8), while for WO_2 they used equation $c_p = 17.83 + 1.89\cdot10^{-3}T - 3.342\cdot10^{5}T^{-2}$. The latter was derived on the basis of the value $c_{p\ 298}$ for WO_2 (Ref. 9), of the c_p values for solids at the conversion temperature and the average values for oxides UO_2, VO_2, and ThO_2. Using these values for the reaction $W + O_2 = WO_2$ (IV),

Card 3/4

84672

Study of the Thermodynamics of Lower Oxides of Tungsten by the Method of Electromotive Force at High Temperatures

S/020/60/134/006/015/031
B016/B067

the authors obtain the equation for ΔG_T:

$\Delta G_T = -136.6 - T(4.66M_0 + 0.21M_1 - 2.44M_{-2}) + 41.7T$ (M_0, M_1, M_{-2} are the coefficients of the equation of M. I. Temkin-L. A. Shvartsman, Ref. 12). It follows therefrom: $\Delta H^0_{298} = -136.6 \pm 2$ kcal; $\Delta S^0_{298} = -41.7 \pm 1.5$ e.u.; $\Delta G^0_{298} = -124 \pm 2$ kcal. By using the value of S^0_{298} for W the authors obtain: $S^0_{298} = 15.0 \pm 1.5$ e.u. For the purpose of comparison Table 3 shows some publication data for the thermodynamic functions of the formation of WO_2 from elements under standard conditions.

There are 3 tables and 17 references: 5 Soviet, 7 US, 2 French, and 3 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 3, 1960

Card 4/4

GERASIMOV, Ya.I.; VASIL'YEVA, I.A.; CHUSOVA, T.P.; GEYDERIKH, V.A.;
TIMOFEYEVA, N.A.

High-temperature study of the thermodynamics of lower tungsten oxides by the e.m.f. method. Dokl. AN SSSR 134 no.6:1350-1352 O '60.
(MIRA 13:10)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
2. Chlen-korrespondent AN SSSR (for Gerasimov)
(Tungsten oxide)

GEYDERIKH, V.A.; VECHER, A.A.; GERASIMOV, Ya.I. (Moscow)

E.m.f. study of the thermodynamic properties of binary metallic
systems. Part 6: The system iron - antimony in the solid state.
Zhur. fiz. khim. 34 no.12:2789-2794 D '60. (MIRA 14:1)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Iron-antimony alloys)

VECHER, A.A.; GEYDERIKH, V.A.; GERASIMOV, Ya.I.

Electromotive force study of the thermodynamic properties of binary metallic systems. Part 7: Iron-antimony liquid alloys. Zhur. fiz. khim. 35 no.7:1578-1585 Jl '61.
(MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Iron—Antimony alloys) (Electromotive force)

S/020/61/137/006/016/020
B101/B201

AUTHORS: Geyderikh, V. A., Gerasimov, Ya. I., Corresponding Member AS USSR, and Nikol'skaya, A. V.

TITLE: Thermodynamic properties of alloys of the iron - tellurium system in the solid state

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 6, 1961, 1399-1401

TEXT: A study has been made of solid Fe-Te alloys by measuring the emf E of the chain $(-)\mathrm{Fe}|\underset{\text{melt}}{\mathrm{FeCl_2(KCl + LiCl)}}|\underset{\text{solid alloy}}{\mathrm{Fe - Te}}\ (+)$ (1). 21 alloys in the phase region β + Te, β, $\beta + \gamma$, γ, $\gamma + \alpha$, and $\beta + \alpha$, have been examined at 360-650°C. Alloy production and methods are described in Ref. 1 (DAN, 130, 1074, (1960)). The linear equations $E = A + BT$ (Table 1) have been calculated by the method of the least squares. The calculated course of the thermodynamic functions is shown in Fig. 2. Results: 1) The formation entropies from the elements of α- and γ-phase are positive. 2) The β-phase arises with diminution of entropy. 3) The formation enthalpies, while having a course parallel to the entropies, remain negative in the whole concentra-

Card 1/4

tion range. 4) A similar course has also been found in the Fe - Sb system. The relationship is explained by the fact that the β-phase of the Fe - Te system inclusive of $FeTe_2$ has a marcasite structure like $FeSb_2$. The γ-phase of the Fe - Te system and the ε-phase of the Fe - Sb system are berthollide phases with defective structure of the type of nickel arsenide. Their range of existence no longer comprises the composition 1 : 1. 5) In accordance with the authors' view concerning the effect of lattice defects in NiAs upon the formation entropy of the intermetallic phase, the range of existence of the γ-phase of the Fe - Te system is more distant from the 1 : 1 composition, than the ε-phase of the Fe - Sb system. 6) In all Fe - Te alloys with the composition $N_{Fe} = 0.35-0.51$ a break appears in the E(T) function at about 513°C, which confirms the eutectic decomposition of the γ-phase into α- and β-phase. Fig. 1 presents the phase diagram of the Fe - Te system according to S. Chiba (Ref. 3, see below). The denotations for the phases are taken from S. Chiba. The authors' results are dash-lined. There are 2 figures, 2 tables, and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc. The 2 references to English-language publications read as follows: S. Chiba, J. Phys. Soc., Japan, 10, 837, (1955); M. Hansen, K. Anderko, Constitution of

S/020/61/137/006/016/020
B101/B201

Thermodynamic properties of alloys ...

Binary Alloys, 1958.

SUBMITTED: January 10, 1961

Fig. 1. Constitution diagram of the Fe - Te system.
Legend: Continuous lines: data by S. Chiba; dashed lines: authors' data.

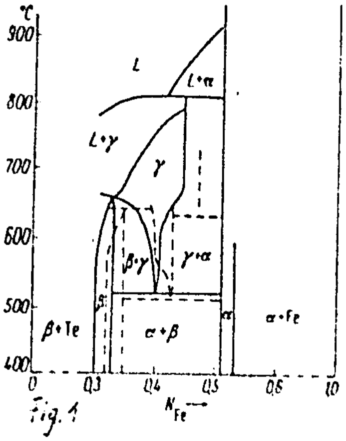

Fig. 1

Card 3/4

20673
S/020/61/140/002/016/023
B130/B110

18.8100

AUTHORS: Geyderikh, V. A., and Gerasimov, Ya. I., Corresponding Member AS USSR

TITLE: Study of thermodynamic properties of cobalt antimonides by the emf method

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 2, 1961, 391-393

TEXT: The thermodynamic integral values of the cobalt antimonides $CoSb_3$, $CoSb_2$, and CoSb were determined by measuring the emf. The method was described by the authors (DAN, 130, 1074 (1960); ZhFKh, 34, 2789 (1960)). The compound $CoSb_2$ deviates from its stoichiometric composition. The upper limit of antimony lies in a homogeneous CoSb compound at 49.2 atom%. The experimental values hold for this composition. Antimony with a purity of 99.99%, and cobalt prepared from chemically pure, nickel-free $Co(NO_3)_2$ were used to produce the alloys. The reaction $Co + 3Sb = CoSb_3$ (1) represents a process of the electrochemical element (-) $Co|CoCl_2 + KCl + LiCl_{melt}|CoSb_3 + Sb$ (+) (solid, heterogeneous melt). The change of the

Card 1/4

isobaric-isothermal potential in reaction (1) is expressed by the emf of element (I). $\Delta G_1 = -zFE_I$ (A), where z is the charge of Co^{2+}, F is the Faraday number, and E_I is the emf of element (I). For studies in the temperature range 790-890°K, the experimental data are described by the following equation: $E_I = (302.2 + 1.45 \cdot 10^{-3}T)$mv $\pm$ 9.6 mv. Then, $\Delta G_1 = (-13.94 - 0.067 \cdot 10^{-3}T)$kcal/mole of $CoSb_3$. The reaction $Co + 2CoSb_3 = 3CoSb_2$ (2) is equal to the process of the element $(-)Co \Big| \underset{\text{melt}}{CoCl_2 + KCl + LiCl} \Big| \underset{\text{solid, heterogeneous melt}}{CoSb_2 + CoSb_3} (+)$ (II). For the temperature range 800-990°K, $E_{II} = (136.3 + 30.4 \cdot 10^{-3}T)$mv $\pm$ 15.0 mv. According to Eq. (A), $\Delta G_2 = (-6.29 - 1.40 \cdot 10^{-3}T)$kcal/g-atom of Co. The formation of $CoSb_2$ from the elements $Co + 2Sb = CoSb_2$ may be regarded as a combination of reactions (1) and (2).

$\Delta G_3 = \frac{2\Delta G_1 + \Delta G_2}{3} = (-11.39 - 0.51 \cdot 10^{-3}T)$kcal/mole of $CoSb_2$. The equation $Co + 2CoSb_2 = 2CoSb$ (4) is equal to the process of the element $(-)Co|\underset{\text{melt}}{CoCl_2 + KCl + LiCl}|\underset{\text{solid, heterogeneous melt}}{CoSb + CoSb_2}(+)$ (III). For the temperature range 770-800°K, $E_{III} = (98.8 + 35.5 \cdot 10^{-3}T)$mv ± 4.2 mv; $\Delta G_4 = (-4.56 - 1.55 \cdot 10^{-3}T)$kcal/g-atom of Co. The formation of CoSb from the elements $Co + Sb = CoSb$ (5) may be regarded as a combination of reactions (3) and (4); then,

$$\Delta G_5 = \frac{\Delta G_3 + \Delta G_4}{2} = (-7.98 - 1.03 \cdot 10^{-3}T)\text{kcal/mole of CoSb}.$$

The enthalpies and entropies were calculated from the equations for ΔG_1, ΔG_3, ΔG_5 on the basis of the relations $\Delta S = -\left(\frac{\partial \Delta G}{\partial T}\right)_p$ and $\Delta H = \Delta G + T\Delta S$. The changes of the thermodynamic functions are given in Table 1. A paper by N. V. Ageyev, Ye. S. Makarov (Izv. AN SSSR, OKhN, 1943, 87) is mentioned. There are 1 table and 10 references: 5 Soviet and 5 non-Soviet. The three references to English-language publications read as follows: T. Rosenqvist,

Card 3/4

28673
S/020/61/140/002/018/023
B130/B110

Study of thermodynamic ...

Acta Metallurgica, 1, 761, (1953); M. Hansen, K. Anderko, Constitution of binary Alloys, 1958; T. Rosenqvist, Magnetic and Crystallographic Studies on the Higher Antimonides of Iron, Cobalt, and Nickel, Trondheim, 1953.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 10, 1961

X

Tabl.1.	$\Delta G = f(T)$, ккал	$\Delta G_{850°K}$, ккал	ΔH, ккал	ΔS, э. е.
$CoSb_3$	$-3{,}48-0{,}02\cdot10^{-3}\,T$	$-3{,}50\pm0{,}11$	$-3{,}5\pm0{,}6$	$0{,}0\pm0{,}7$
$CoSb_2$	$-3{,}80-0{,}17\cdot10^{-3}\,T$	$-3{,}94\pm0{,}17$	$-3{,}8\pm0{,}7$	$+0{,}2\pm0{,}8$
CoSb	$-3{,}98-0{,}52\cdot10^{-3}\,T$	$-4{,}43\pm0{,}18$	$-4{,}0\pm0{,}6$	$+0{,}5\pm0{,}7$

Card 4/4

GEYDERIKH, V. A.

Dissertation defended for the degree of Candidate of Chemical Sciences at the Institute of General and Inorganic Chemistry imeni N. S. Kurnakov: in 1962:

"Investigation of Thermodynamic Properties of Solid Alloys of the Systems Fe-Sb, Co-Sb, Cr-Sb, and Fe-Te Using the Method of Electromotive Forces."

Vest. Akad. Nauk SSSR. No. 4, Moscow, 1963, pages 119-145

GEYDERIKH, V.A.; GERASIMOV, Ya.I.

Heats of atomization of transition metal compounds of the iron group.
Zhur.fiz.khim. 37 no.10:2353-2355 O '63. (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet.

SUNDARESEN, M.; GERASIMOV, Ya.I.; GEYDERIKH, V.A.; VASIL'YEVA, I.A.

Study of the thermodynamic properties of iron-platinum alloys by the method of electromotive forces. Zhur. fiz. khim. 37 no.11:2462-2466 N'63. (MIRA 17:2)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

L 1648-66 EWT(m)/EWP(w)/EPF(c)/EPF(n)-2/T/EWP(t)/EWP(b) IJP(c) JD/WW/JG

ACCESSION NR: AP5021428 UR/0076/65/039/008/2080/2081
541.11

44,45 B

AUTHOR: Vecher, A. A.; Vecher, R. A.; Geyderikh, V. A.; Vasil'yeva, I. A.

TITLE: Nature of the conductivity of the solid electrolyte 0.85 ThO_2 + 0.15 La_2O_3

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 8, 1965, 2080-2081

TOPIC TAGS: thorium 21 oxide, lanthanum 21 oxide, 21 electric conductivity, 15 galvanic cell, transference number

ABSTRACT: Derivation of the equation for the average ion transference number

$$\bar{t}_{ion} = \frac{E}{E_0}$$

shows that if the thermodynamic data for a reaction occurring in a cell are known, this equation can be used to calculate the average ion transference number for an electrolyte for certain given electrodes. The emf of the cell

Card 1/2

L 1648-66

ACCESSION NR: AP5021428

was measured at 1000°K and found to be 300 ± 20 mV. The thermodynamic emf E_0, calculated from data for FeO and SiO_2, is equal to 797 ± 20 mV. Hence, t_{ion} = 0.38 ± 0.08 for the electrolyte $0.85ThO_2 + 0.15La_2O_3$ with the electrodes Si, SiO_2 (p_{O_2} = 10^{-37} atm) and Fe, FeO (p = 10^{-21} atm), which is close to the value reported in the literature for the electrolyte $0.85ZrO_2 + 0.15CaO$ for approximately the same conditions. It is concluded that thermodynamic quantities for SiO_2 cannot be obtained by the emf method with a solid electrolyte having oxygen conductivity because an appreciable electronic conductivity arises in the electrolyte, and the galvanic cell ceases to be reversible. Orig. art. has: 4 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 06Mar65 ENCL: 01 SUB CODE: GC

NO REF SOV: 001 OTHER: 004

Card 2/2

L 1663-66 EWT(1)/EWT(m)/ETC/EWG(m)/EWP(t)/EWP(b)/ETC(m) IJP(c) JD/JW

ACCESSION NR: AP5023683

19

UR/0076/65/039/2145/2149
541.11

48
45
B

AUTHOR: Vecher, A. A.; Geyderikh, V. A.; Gerasimov, Ya. I.

44,55 44,55 44,5

TITLE: Study of thermodynamic properties of binary alloys by the method of electromotive forces. Part 10: The aluminum-antimony system

44,55 27 27

SOURCE: Zhurnal fizicheskoy khimii, v. 39, no. 9, 1965, 2145-2149

TOPIC TAGS: aluminum alloy, antimony alloy, electromotive force, thermodynamic property

18

21 44,55

ABSTRACT: The thermodynamic properties of the compound formed by aluminum and antimony were studied by measuring the emf of the cell

$$(-)Al(s)|AlCl_3|\text{ in }KCl + LiCl\text{ melt }|\ AlSb + Sb(s)(+)$$

in the 663-889°K range. The thermodynamic functions of formation of solid AlSb from solid components at 800 and 298°K and from liquid components in the 663-1333°K range were calculated. The liquidus line, calculated on the basis of the authors' own results with the assumption that Al-Sb melts obey Raoult's law, agrees well with the liquidus line obtained experimentally by G. G. Urazov (*Izv. in-ta fiz. khim. analiza*,

Card 1/2

L 1663-66

ACCESSION NR: AP5023683

3

1, 161, 1921) in the Al-AlSb region. The agreement is not as good in the AlSb-Sb region. The thermodynamic functions of formation of the $Al_{0.5}Sb_{0.5}$ melt from liquid components at the melting point of AlSb were calculated. The high negative enthalpy and excess entropy of formation offset each other so that the excess Gibbs free energy of formation of the melt $\Delta G^{0,\,\mathrm{exc}}_{1333}$ is close to zero. Orig. art. has: 1 figure, 2 tables, and 12 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 15May64

ENCL: 00

SUB CODE: GC, MM

NO REF SOV: 009

OTHER: 002

Card 2/2

[illegible]

[illegible] (MIRA 16:20)

[illegible] ment [illegible]

VECHER, R.A.; GEIDERIKH, V.A.; GERASIMOV, Ya.I.

Thermodynamic properties of iron-silicon alloys. Izv.AN SSSR. Neorg.mat. 1 no.10:1722-1731 O '65.

(MIRA 18:12)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova. Submitted July 5, 1965.

VECHER, A.A.; GEYDERIKH, V.A.; GERASIMOV, Ya.I.

Study of the thermodynamic properties of binary alloys by the electromotive force method. Part 10. Zhur. fiz. khim. 39 no.9:2145-2149 S '65. (MIRA 18:10)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

[illegible], [illegible], Inzh.; [illegible], [illegible]; [illegible];
SHISHKOV, I.M., Inzh.

Automation of the hydroelectric power stations of the Bukovskiy Regional Power System for parallel operation with its power system. Energ. i elektrotekh. prom. no.3:7-10 [illegible]
(MIRA 17:[illegible])

AUTHORS: Kovalenko, P. N., Geyderovich, O. I. SOV/156-58-2-[illegible]/48

TITLE: Determination of the pH-Value of the Beginning of the Precipitation and of the Activity-Product of Silver-Hydroxide by Means of the Polarographic Method (Opredeleniye znacheniya pH nachala osazhdeniya i proizvedeniya aktivnosti gidrookisi serebra polyarograficheskim metodom)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 2, pp. 294-296 (USSR)

ABSTRACT: The determination of the afore-said pH-value is of importance for the solution of several problems of chemical technology and analytical chemistry of silver. The purpose of the present investigation is to determine the distance of the pH-values both at the beginning and at the end of the silver-hydroxide precipitation in dependence on the silver-concentration and to calculate the activity-product therefrom. For the purpose of determining the silver-concentration, a) the method of additions and b) the method of the "straight line of calibration" (Fig 1) were applied. An abrupt decrease of the diffusion current at a certain pH-value proved the formation of the solid phase of the hydroxide. The beginning of the precipitation of AgOH as deposit

Card 1/4

SOV/156-58-2-22/48

Determination of the pH-Value of the Beginning of the Precipitation and of the Activity-Product of Silver-Hydroxide by Means of the Polarographic Method

depends on the initial concentration of the silver. Figure 2 shows the decrease of the silver-ion-concentration in dependence on the pH of the solution. An abrupt decrease in concentration takes place at pH 9,2 to 9,3, according to the initial concentration of silver which indicates the formation of the solid AgOH-phase. Silver-concentrations which are formed at pH > 9,2 to 9,3 were used for the calculation of L_p. In order to find the value of the activity-product L_a for silver-hydroxide, a diagram of the dependence $-\lg L_p$ on the Ag^+ - concentration which decreases due to the increasing pH-value, was established (Fig 3). Within the range of low concentrations of the silver-ions a linear dependence exists between the negative logarithm a of the solubility product and C_{Ag} (Refs 2, 3). The value a is obtained by extrapolation of the curves of figure 3 up to the intersection with the ordinate, i.e. one of an infinitely low silver-concentration, [illegible]. All curves, independent of the initial concentration of the investigated salt $AgNO_3$, coincide in one point which is located on the ordi-

Card 2/4

rate and they cut off a section equal to $-\lg L_n = 7,[illegible]$, $L_p = [illegible] \cdot 10^{-8}$. The sources available from publications give contradictory data on the solubility product. They indicate that the determinations were carried out under conditions of different ionic density (Ref 4) It follows from figure 4 (dependence of $-\lg L_p$ on the pH of the solution) that the deposit taking place in connection with the hydrolysis of a silver-salt is AgOH There are 4 figures and 4 references, [illegible] of which are Soviet.

ASSOCIATION: Kafedra analiticheskoy khimii Rostovskogo-na-Donu gosudarstvennogo universiteta (Chair of Analytical Chemistry of the Rostov-na-Donu State University)

SUBMITTED: October 16, 1957

Card 3/4

SOV/156-58-2-22/48

Determination of the pH-Value of the Beginning of the Precipitation and of the Activity-Product of Silver-Hydroxide by Means of the Polarographic Method

Card 4/4

5(2) SOV/78-4-9-7/44

AUTHORS: Kovalenko, P. N., Geyderovich, O. I.

TITLE: The Determination of the pH of the Beginning of Precipitation as Well as of the Activity Product of Beryllium Hydroxide

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 9, pp 1974-1978 (USSR)

ABSTRACT: The publications on the solubility of beryllium hydroxide are contradictory (Refs 1, 2, 8). From references 1-5 it is evident that the composition of the hydroxyl compounds of Be varies with the conditions of precipitation. The pH values at the beginning and the end of the precipitation of $Be(OH)_2$ were determined polarographically by means of a dropping mercury cathode. A direct proportionality between Be concentration and strength of diffusion current of good reproducibility was obtained on addition of tetramethyl and tetraethyl ammonium salts (Fig 1). Average values of a number of measurements are given in table 1. As shown in figure 2, precipitation begins at pH 2.35 - 2.65 depending on the Be concentration

Card 1/3

SOV/78-4-9-7/44

The Determination of the pH of the Beginning of Precipitation as Well as of the Activity Product of Beryllium Hydroxide

(between 1.10^{-3} and $0.5.10^{-3}$) but is always completed at pH 3.1, irrespective of the Be concentration. Basic salts are formed at the outset, the hydroxide only being formed at the end of precipitation (pH 2.9 - 3.1). The solubility product (SP) is not a constant, as is shown in figure 3, but depends on the concentration of beryllium, a linear relationship existing between -lg SP and the concentration. On extrapolating the straights plotted for the various concentrations to zero concentration, -lg AP = const = -25.7 is obtained for the activity product (AP). This corresponds to the concentration of beryllium at the end of precipitation at pH 3.1. Thus, the AP for $Be(OH)_2$ is equal to 2.10^{-26}. There are 3 figures, 1 table, and 24 references, 15 of which are Soviet.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy universitet (Rostov-na-Donu State University)

Card 2/3

KOVALENKO, P.N.; GEYDEROVICH, O.I.

Determination of the pH of the beginning of dissolution and of the product of yttrium hydroxide activities. Izv.vys.ucheb.zav.; khim.i khim.tekh. 5 no.1:58-61 '62. (MIRA 15:4)

1. Rostovskiy-na-Donu gosudarstvennyy universitet, kafedra analiticheskoy khimii.

(Yttrium hydroxides) (Hydrogen-ion concentration)
(Solubility)

[illegible]

[illegible]

[illegible]

GEYDMAN, B.P.

An object of centroprojective connectivity on a manifold of almost complex structure. Dokl. AN SSSR 159 no.2:247-249 N '64. (MIRA 17:12)

1. Moskovskiy gosudarstvennyy pedagogicheskiy institut im. Lenina. Predstavleno akademikom P.S. Novikovym.

SEREGIN, P.V., inzh.; [illegible], P., inzh.; SMIRNOV, Ye.A., inzh.; GRINSHTEYN,
L.A., inzh.

Erecting precast reinforced concrete cooling towers. Mont. i spets.
rab. v stroi. 23 no.3:16-27 Mr '61. (MIRA 14:2)
(Cooling towers) (Precast concrete construction)

SKUPNEVSKIY, Stepan Il'ich; GEYDON, L.M., red.; GURVICH, F.G.,
red. izd-va; SOTNIKOVA, N.F., tekhn. red.

[Boilers and locomobiles used in consumers' cooperative enterprises; a manual for stokers and mechanics] Kotly i lokomobili na predpriiatiiakh potrebitel'skoi kooperatsii; rukovodstvo dlia kochegarov i mashinistov. Moskva, Izd-vo TSentrosoiuza, 1963. 187 p. (MIRA 17:2)

L 31819-66 EWT(m)/EWP(w)/T/EWP(t)/ETI/EWP(k) IJP(c) MJW/JD/HW

ACC NR: AP6019498 (A) SOURCE CODE: UR/0129/66/000/006/0007/0009

AUTHOR: Karpov, A. G.; Geydysh, I. S.

ORG: none

TITLE: Effect of mechanothermal treatment on the properties of 36NKhTYu, 36NKhTYuM8, and 42NKhTYu spring alloys

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 6, 1966, 7-9

TOPIC TAGS: nickel base alloy, chromium containing alloy, aluminum containing alloy, titanium containing alloy, spring alloy, alloy property, alloy treatment, mechanothermal treatment, treatment effect/36NKhTYu alloy, 36NKhTYuM8 alloy, 42NKhTYu alloy

ABSTRACT: The effect of mechanothermal treatment on the properties of 36NKhTYu, 36NKhTYuM8, and 42KhNTYu nickel-base spring alloys has been investigated. Alloy sheets 0.465—0.316 mm thick were annealed at 970C (36NKhTYu), 1050C (36NKhTYuM8) and 910C (42KhNTYu), water quenched and subjected to mechanothermal treatment, cold rolled with 5—40% reduction to sheets 0.3 mm thick, and tempered at 690C for 3 hr (36NKhTYu and 42NKhTYu) or at 750C for 4 hr (36NKhTYuM8). It was found that mechanothermal treatment increased the alloy yield strength, hardness, and especially the limit of elasticity, but has little effect on the dynamic modulus of elasticity or on the tensile strength of the 36NKhTYu alloy. The tensile strength of 42NKhTYu and 36NKhTYuM8 alloys increased with increasing reduction. The elongation of all

Card 1/3 UDC: 669.14.018.58

L 31819-66

ACC NR: AP6019498

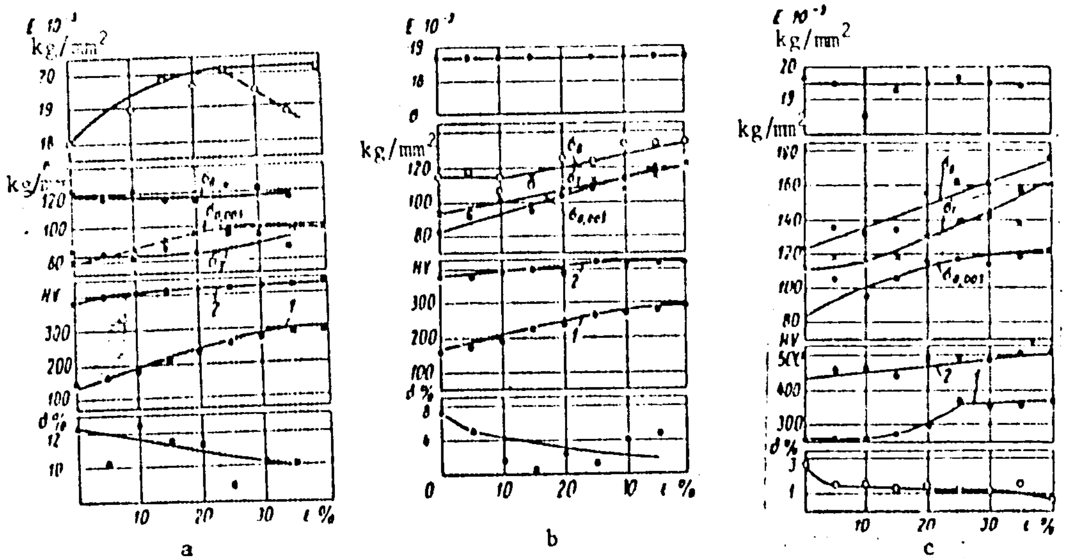

Fig. 1. Effect of plastic deformation on properties of alloys before tempering

a - 36NKhTYu alloy; b - 36NKhTYuM8 alloy; c - 42NKhTYu alloy, 1 - hardness before tempering; 2 - after tempering.

Card 2/3

L 31819-66

ACC NR: AP6019498

tested alloys decreased with the increase of reduction (see Fig. 1). Thus, mechano-thermal treatment improves the characteristics of elasticity of spring alloys and is especially promising for treating parts whose further fabrication does not require high plasticity. Orig. art. has: 1 figure. [ND]

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 001/ ATD PRESS: 5020

Card 3/3 gv

CHALYKH, Ye.F.; GEYDYSH, L.S.

Use of synthetic resins as binders for electrode carbon products.
Trudy MKHTI no.28:121-124 '59. (MIRA 13:11)
(Electrodes, Carbon) (Resins, Synthetic)

L 42091-66 EWT(m)/EWP(j) IJP(c) JWD/RM

ACC NR: AP6029026 SOURCE CODE: UR/0413/66/000/014/0026/0026

INVENTOR: Ryashentseva, M. A.; Minachev, Kh. M.; Geydysh, L. S.; Kuz'minskiy, A. S.; Angert, L. G.

ORG: none

42

B

TITLE: Preparative method for stabilizers 15 of raw and vulcanized rubber. 15 Class 12, No. 183763 [announced by Institute of Organic Chemistry im. N. D. Zelinskiy, AN SSSR (Institut organicheskoy khimii AN SSSR); Scientific Research Institute of the Rubber Industry (Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti)]

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 26

TOPIC TAGS: stabilizer, ~~raw~~ natural rubber, ~~vulcanized~~ synthetic rubber, ~~hydroquinone,~~ para~~phenylenediamine, ketone alkylation~~ + vulcanization

ABSTRACT: This Author Certificate presents a method for preparing stabilizers of raw and vulcanized rubber. The method involves alkylation of the hydroquinone—p-phenylenediamine molecular compound at 150—180C and 110—160 atm. Such ketones as acetone or 2-butanone are used as alkylation agents. Alkylation is conducted in the presence of palladium sulfide and glacial acetic acid. [BO]

SUB CODE: 11/ SUBM DATE: 14Jun65/ ATD PRESS: 5062

Card 1/1 af UDC: 547.553.1'53'023.07

GEYDYSH, S.S., inzh., retsenzent; VENGEROVSKIY, Ya.S., red.;
POPOVA, S.M., tekhn. red.

[Technical and economic planning] Tekhniko-ekonomicheskoe
planirovanie. Moskva, Mashgiz, 1949. 166 p.
(MIRA 15:4)

1. Vsesoyuznaya konferentsiya po vnutrizavodskomu planirovaniyu
v mashinostroyenii. 3d, Moscow, 1949.
(Machinery industry)

GEIDYSH, S. S.

Mekhanizatsii ucheta i vychislitel'nykh rabot. (Vestn. Mash., 1950, no. 2, p. 67-70)

(Mechanization of the accounting system and calculating operations.)

DLC: TN4V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953

GEYDYSH, S. S.

"The complex mechanization of accounting and calculation work," Mechanization of Labor Consuming and Heavy Work, 1951.

GEYDYSH, S.S.

The most important tasks of industrial cooperatives and local industries. Standartizatsiia no.1:15-18 Ja-F '54. (MLRA 7:2)

1. Upravleniye po standartizatsii. (Russia--Industries)

GEYDYSH,S.S., inzhener

Engineering and economic aspects of setting up tentative standards for metals. Standartizatsiia no.6:9-14 N-D'54. (MLRA 8:10)

1. Komitet standartov, mer i izmeritel'nykh priborov
(Metals--Standards)

GEYDYSH,S.S.

For adequate normalization and unification in machinery design.
Standartizatsiia no.5:3-8 S-O '55. (MLRA 8:11)
(Machinery industry--Standards)

GEYDYSH, S.S.

Conference on preferred numbers. Standartizatsiia no.1:89-90
Ja-F '57. (MLRA 10:5)

(Simplification in industry)

GEYDYSH, S.S.

AUTHOR: Geydysh, S.S. 28-3-2/33

TITLE: Technical-Economical Basis of Standards for Machines (Tekhniko-ekonomicheskoye obosnovaniye standartov na mashiny)

PERIODICAL: Standartizatsiya, 1957, # 3, May-June, p 7-13 (USSR)

ABSTRACT: The article treats statistical mathematics employed in the USSR for calculations of standards ("norms") for output, weight of machines, labor in man hours, power, prime costs, etc., in machinebuilding. The method is based on the analysis of data from USSR and foreign enterprises. The economical importance of standardization is discussed. Equations used by the Experimental Research Institute for Metal-Cutting Machine Tools (ENIMS) and by TsKBM are cited.

Two formulas by Engineer A.F. Nistratov (for calculation of relative output increase of machines by preference series and of metal consumption as a function of the parameter series density) are given. Some fixed values used in calculations show the actual cost items in machine tool building: machine tool 1A62-750 mm requires 370 man hours of labor, 797 roubles in direct wages, 6,182 roubles for materials and semi-finished products, 2,775 roubles for administrative expenses. In this way, the prime cost of the machine is 9,754 roubles, and of

Card 1/2

Technical-Economical Basis of Standards for Machines 28-3-2/33

a man hour 3,572 : 370 = 9 roubles 75 kop. The design unification enabled output of compressors in larger series (1,500 yearly instead of former 600), enabled the use of production lines and reduced the workhours from 700 per machine to 230 (in which the former 500 hours for machining dropped to 170 hours). The article gives the general calculation principles.

There are 3 charts and 1 diagram.

ASSOCIATION: The Committee of Standards, Measures and Measuring Devices (Komitet standartov, mer i izmeritel'nykh priborov)

AVAILABLE: Library of Congress

Card 2/2

LEVINSON, Nikolay Grigor'yevich [deceased]; GEYDYSH, S.S., inzh., retsenzent; GINTSBURG, M.V., inzh., retsenzent; LUGOVOY, M.V., inzh., retsenzent; REZNIK, I.S., inzh., retsenzent; TROYANOVSKIY, V.V., inzh., retsenzent; TIMOFEYEVSKIY, T.P., inzh., red.; BARYKOVA, G.I., red.izd-va; MODEL', B.I., tekhn.red.

[Mechanization of management control (management technology)] Mekhanizatsiia upravlencheskogo truda (orgatekhnika). Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry. Vol.1. 1958. 386 p. (MIRA 12:2)

(Automatic control) (Industrial management)

GEYDYSH, S.S.

Elimination of unnecessary types of products is the most important objective of standardization agencies. Standartizatsiia 25 no.1:3-5 Ja '61.
(MIRA 14:3)

(Standardization)

[illegible]

ACCESSION NR: AP4046907 S/0025/64/000/008/0038/0038

AUTHOR: [illegible]

TITLE: International winter school for theoretical physics in Dubna

SOURCE: Nauka i zhizn', no. 8, 1964, 38

TOPIC TAGS: theoretical physics, international physics school

[illegible]

Card 1/2

[redacted]

L 23793-65
ACCESSION NR: AP4048957

10

[illegible] formation [illegible]; Y. G. Grishin, boron [illegible]
[illegible] properties and resonance [illegible]
[illegible] D. R. Shishkov [illegible]

GRIGAS, V.A.; GEYER, D.M.; SHENDEROV, A.I.; Martynov, A.S.

Walking, movable equipment. Gor. zhur. no.2:76 F '65.
(MIRA 18:4)

GEYER, P.L.;GRABINA, Ye.M.

Method of therapy with oxygen in oxygen tent and the role of the nurse. Med. sestra, Moskva no.12:13-16 Dec 1953. (CIML 25:5)

1. Departmental Physician for Geyer; Senior Nurse for Grabina. 2. Kiev.

DOERFFEL, Klaus; GEYER, R.; MUELLER, Guenther

Determination of natrium in minerals with the application of the atom absorption spectral analysis. Chemia anal 7 no.1: 229-230 '62.

1. Institute of Analytical Chemistry, Technical College for Chemistry, Leuna-Merseburg, Germany.

25(1), 28(1) SOV/118-59-9-13/20

AUTHOR: Geyer V.G., Doctor of Technical Sciences, Professor and
Kostanda V.S., Engineer

TITLE: Hydraulic Lifting of Pulp by Air-Lifting and Coal-Suction Air-Lifting Installations

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, 1959, Nr. 9, pp 52-56 (USSR)

ABSTRACT: At the present time, almost all hydro-shafts are using centrifugal pumps for lifting coal-rock pulp. There are many advantages in applying this method: the feed of pulp from the face to the concentrating factory is performed without reloading, the lifting process is simple, and its efficiency is satisfactory. However, this method can be applied only where the lifting height is under 250 m, otherwise several successively connected pumps are required. In such cases, it is more expedient to apply a coal-suction air-lifting device (Fig. 1). This method permits the lifting of pulp to a height of 600 m and more; its efficiency can be regulated within broad limits by changing the pressure and

Card 1/3