L 63100-65 EWT(m)/EPF(c)/ENP(j)/EWA(c) RPL WW/RM

ACCESSION NR: AP5014998 UR/0240/65/000/006/0057/0059

AUTHOR: Krayzman, P. S.; Chekhovskaya, Ye. V.

TITLE: Investigation of water wastes in acrylonitrile production; methods of identifying specific contaminants

SOURCE: Gigiyena i sanitariya, no. 6, 1965, 57-59

TOPIC TAGS: industrial waste, water, chemical identification, toxicology

ABSTRACT: Water wastes of acrylonitrile synthetic fiber production were studied to determine quantitative methods of identifying the following highly toxic contaminants: cyanides, lactonitrile, and acrylonitrile. For identification of cyanides and lactonitrile, modified colorimetric methods were found most effective. For determining the presence of acrylonitrile, a mercaptane method proved satisfactory; and, for more exact determination in smaller quantities of water wastes, a sulfite method with alkaline saponification of the acrylonitrile is recommended. Analysis of samples taken at different times shows that water wastes of

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ACCESSION NR: AP5014998

acrylonitrile production belong in the category of industrial water wastes with highly concentrated organic substances. The biochemical oxygen requirement values indicate that a considerable part of the organic substances can be oxidized biochemically. The presence of cyanides, lactonitrile, and acrylonitrile in large quantities produce a strong specific odor, and more important are highly toxic. Water wastes of this type require dilution by many thousands of times to comply with sanitation regulations, and in this case purification before disposal appears unavoidable. Orig. art. has: 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy institut vodosnabzheniya, kanalizatsii, gidrotekhnicheskikh sooruzheniy i inzhenernoy gidrogeologii UkrVODGEO, Khar'kov (Scientific-Research Institute of Water Supply, Sewers and Hydrotechnical Construction and Engineering Hydrogeology, UkrVODGEO)

SUBMITTED: 19Feb64 ENCL: 00 SUB CODE: GO, GC

NR REF SOV: 003 OTHER: 003

Card 2/2

KOLOTOVA, L.S.; CHEKHOVSKIKH, A.M.; OSIPENKO, N.N.

Protecting hoisting systems from rope lapping in case of jamming of hoisting equipment in the headframe. Izv. vys. ucheb. zav.; gor. zhur. no.12:101-104 '61. (MIRA 16:7)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornoy mekhaniki.
(Mine hoisting--Safety measures)

CHERNOVSKIKH, M. ...

Dissertation: "Investigation and Elimination of the Volatility of Boric Anhydride in the Process of Glassmaking." Cand Tech Sci, Moscow Chemicotechnological Institute, Moscow, 1953. (Referativnyy Zhurnal-Khimiya, No 9, Moscow, May 54)

SO: SUM 318, 23 Dec 1954

CHEKHOVSKIKH, M.M.; KIM CHAN SUN

Distribution of rare elements in eruptive rocks and their contacts in the Chusovskoye massif of the Central Urals. Vest.Mosk.un.Ser. biol., pochv., geol., geog. 14 no.1:169-176 '59.
(MIRA 12:9)

1. Moskovskiy gosudarstvennyy universitet, Kafedra petrografii.
(Chusovskoye region--Trace elements)

KUZNETSOV, Ye.A.; CHEKHOVSKIKH, M.M.

Composition and birefringence dispersion of clinochlore from Karabash Mountain in the Urals. Vest. Mosk. un. Ser. 4: Geol. 15 no.4:69-70 Jl-Ag '60. (MIRA 13:10)

1. Kafedra petrografii Moskovskogo universiteta.
(Karabash region (Ural Mountains)—Chlorites)

ALEKSIN, A.A.; CHEKHOVSKIKH, M.M.

Modeling the hydrologic processes taking place in the depths of the earth's crust. Vest. Mosk. un. Ser. 4: Geol. 19 no.1:3-7 Ja-F '64. (MIRA 18:2)

1. Kafedra gruntovedeniya i inzhenernoy geologii Moskovskogo universiteta.

AIEKSIN, A.A.; CHEKHOVSKIKH, M.M.

Methods for laboratory experimental investigations of hydrogeological processes in the earth's crust. Izv. vys. ucheb. zav.; geol. i razv. 7 no.12:91-97 D '64. (MIRA 18:12)

1. Moskovskiy gosudarstvennyy universitet.

L 25631-65 EWT(m)/EWP(b)/EWA(d)/EWP(t) IJP(c) JD/WB

ACCESSION NR: AP4044547 S/0073/64/030/008/0788/0792

15
12
B

AUTHOR: Lavrenko, V. A.; Chekhovskiy, A. A.

TITLE: Kinetics and mechanism of anodic oxidation of titanium in oxalic acid solution

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 30, no. 8, 1964, 788-792

TOPIC TAGS: titanium anodic oxidation, oxidation kinetics, oxidation mechanics, oxalic acid solution

ABSTRACT: The kinetics of anodic oxidation of titanium in a saturated solution of oxalic acid was investigated in the range of the anodic current density from 5 to 60 ma/cm^2 at the temperature from 25 to 60C, by the method of the charging and polarization curves. Empirical equations were found which give the dependence of the constant of the rate of change of the potential and oxidation rate of titanium on the anodic current density, and also expressions connecting the oxidation rate and the anodic current with the effective field of film formation. The parameters A+ and B+ were computed which determine the activation barrier for

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L 25631-65
ACCESSION NR: AP4044547

oxidation. The mechanism of the anodic oxidation of titanium was considered as due to the semiconductivity of the n-type of the oxide film of TiO_2. A scheme of the process is suggested which is based on the counter current of diffusing anions toward metal, and the diffusion of the anion holes toward the oxide-electrolyte boundary. Orig. art. has: 6 figures and 7 equations

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR (Institute of Metalloceramics and Special Alloys, AN UkrSSR)
SUBMITTED: 06Jun63 ENCL: 00 SUB CODE: GC, MM

NR REF SOV: 002 OTHER: 009

Card 2/2

L 3164-66 EWT(m)/EPF(c)/ETC/EPF(n)-2/EWG(m)/T/EWP(t)/EWP(b) IJP(c)
DS/JD/JG/WB

ACCESSION NR: AP5014307 UR/0073/65/031/006/0587/0592
669.293

AUTHOR: Lavrenko, V. A.; Chekhovskiy, A. A.

TITLE: Kinetics of anodic oxidation of niobium in oxalic acid solutions

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 31, no. 6, 1965, 587-592

TOPIC TAGS: niobium, oxidation, corrosion, anode polarization, oxalic acid, reaction rate

ABSTRACT: The purpose of this study was to investigate the anodic oxidation of niobium at current densities much greater than those investigated previously (1-15 ma/cm^2) in the temperature range from 20 to 60°C. A saturated solution of oxalic acid was used as electrolyte. Niobium oxides are chemically most inert in this type of electrolyte. The investigations were conducted by charging curves and by polarization curves. Platinum foil was used as an anode, separated from the cathode compartment by a glass frit. The electrolytic cell was thermostatted to ± 0.1°C. Two types of specimens were used: a) recrystallized Nb, annealed at 1800°C in a vacuum furnace for 2 hrs and b) cold worked Nb specimens, deformed to 50% of their

Card 1/3

L 3164-66

ACCESSION NR: AP5014307

height on a rolling mill. It was found that deformation of the crystal lattice of Nb produces a large number of active centers for oxidation reaction on the anode surface. It is believed that three consecutive electrode reactions, as witnessed by current density vs potential densities, take place:

$$Nb + H_2O = NbO + 2H^+ + 2e$$

$$NbO + H_2O = NbO_2 + 2H^+ + 2e$$

$$2NbO_2 + H_2O = Nb_2O_5 + 2H^+ + 2e$$

Equations were derived which give the constant rate of change in the electrode potential and the specific rate of oxidation of niobium as functions of anode current density. The significant acceleration in the oxidation of niobium in the case of cold worked metal specimens results from lowering of the activation barrier for oxidation as well as from the increase in the effective area of formation of oxide film by almost an order of magnitude. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Materials Research Institute, AN UkrSSR)

44,55

Card 2/3

L 3164-66

ACCESSION NR: AP5014307 O

SUBMITTED: 03Jan64 ENCL: 00 SUB CODE: GC, MS

NO REF SOV: 002 OTHER: 002

Card 3/3 md

BREYTMAN, M.M., inzh.; CHEKHOVSKIY, A.R., inzh.

Rotating machine tools for metal cutting and their use in automatic production lines. Mekh. i avtom.proizv. 16 no.1:8-13 Ja '62. (MIRA 15:1)

(Machine tools)
(Automation)

Chekhovskiy, P.A.

133-12-11/26

AUTHORS: Khlebnikov, V.P., Fradin, M.D., and Chekhovskiy, P.A.

TITLE: On the Problem of Rational Design of Roll Passes for Rails (K voprosu o ratsional'noy kalibrovke rel'sov)

PERIODICAL: Stal', 1957, No.12, pp. 1103 - 1107 (USSR).

ABSTRACT: This is a contribution to the discussion of the paper by P.A. Aleksandrov and I.S. Trishevskiy (Stal', 1955, No.12). The present authors consider that a rigid approach to the use of high semis for rolling rails as well as of a high and sharp crown in the first trapezoidal pass is not beneficial for the quality of rails produced. Improvements in the quality of rails obtained on changes in the design of roll passes on a mill 900 for rails P-50 used in 1954, 1955 and 1956 (Figs. 2, 3 and 4, respectively) in which the shape of roll passes has been modified and the number of trapezoidal passes steadily decreased to two, indicate the possibility of adoption of not more than 3 trapezoidal passes for an optimum calibration. There are 2 tables, 4 figures and 4 references, 3 of which are Slavic.

ASSOCIATION: Azovstal' Works (Zavod "Azovstal'")

AVAILABLE: Library of Congress

Card 1/1

FRADIN, M.D., inzh.; CHEKHOVSKIY, P.A., inzh.; KHLEBNIKOV, V.P., inzh.

Review of B.M. Shum's book "Rail and heavy-section mills." Stal' 17 no.12:1112-1113 D '57. (MIRA 11:1)

1. Zavod "Azovstal'."

(Rolling mills)
(Shum, B.M.)

SOV/130-58-8-11/18

AUTHORS: Tatarnikov, V.V., Rozhin, M.I. and Chekhovskiy, P.A.

TITLE: Mechanisation of Sample-conveying from Hot-cutting Saws to the 800 mill (Mekhanizatsiya podachi prob ot pil goryachey rezki k stanu 800)

PERIODICAL: Metallurg, 1958, Nr 8, p 27 (USSR)

ABSTRACT: In place of the manual conveyance of samples over 120 m from the hot-cutting saw to the 800 mill at the "Azovstal'" Works, a semi-automatic trolley-line has been installed (figure).
There is 1 figure.

ASSOCIATION: Zavod "Azovstal'" ("Azovstal'" Works)

1. Industrial plants--Equipment 2. Metals--Transportation

Card 1/1

KHALETSKA, N.I.; CHEKHOVSKIY, N.S.; P'YANKOV, P.I.; OSTROVSKIY, N.N. BIRBRAYER, M.L.; ABRAMOVA, N.I.; KOGAN, G.Kh., kand.med.nauk; ANDZHELOV, V.O., kand.med.nauk

Abstracts. Sovet. med. 27 no.9:131-133 S'63 (MIRA 17:2)

1. Iz kafedry gospital'noy terapii Voyenno-meditsinskoy ordena Lenina akademii imeni Kirova (for Khaletskaya, Chekhovskiy). 2. Iz kliniki infektsionnykh bolezney Permskogo meditsinskogo instituta (for P'yankov). 3. Iz kafedry infektsionnykh bolezney Blagoveshchenskogo meditsinskogo instituta (for Ostrovskiy) 4. Iz kafedry kozhnykh i venericheskikh bolezney Odesskogo meditsinskogo instituta imeni Pirogova (for Birbrayer). 5. Iz kafedry kozhnykh bolezney II Moskovskogo meditsinskogo instituta imeni Pirogova (for Abramova). 6. Iz kozhnogo dispansera 24-y gorodskoy bol'nitsy Dnepropetrovska (for Kogan). 7. Iz nauchno-issledovatel'skogo instituta glaznykh bolezney imeni Gel'mgol'tsa (for Andzhelov).

L 8991-66 EWT(l)/EWP(e)/EWT(m)/ETC/EPF(n)-2/EWG(m)/EWP(t)/EWP(k)/EWP(z)/EWP(b)
ACC NR: AP5016695 EWA(h)/ETC(m) SOURCE CODE: UR/0294/65/003/003/0395/0400
IJP(c) JD/WW/JW/JG

AUTHOR: Kirillin, V. A.; Sheyndlin, A. Ye.; Chekhovskoy, V. Ya.; Zhukova, I. A.

ORG: Scientific Research Institute of High Temperatures (Nauchno-issledovatel'skiy institut vysokikh temperatur)

TITLE: Experimental determination of the enthalpy of niobium in the 600 to 2600°K temperature range

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 3, 1965, 395-400

TOPIC TAGS: enthalpy, high temperature metal, powder metallurgy, heat capacity

ABSTRACT: The method of mixing is used to determine the enthalpy of niobium in the temperature range of 582°K to 2587°K. The calorimeter and oven used in the experiment were placed in a vacuum chamber and it is shown that results obtained at 10^{-2} to 10^{-3} mm Hg pressure agree with those obtained in an argon atmosphere. The measurements were made on samples produced by powder metallurgy and electric arc methods. No difference in the results was found. A detailed description of measurements which were necessary to assure minimum error is presented. The effect of vacancies at high temperatures was observed and its effect on the accuracy is considered. The results are presented in graphical and table form. In addition to the enthalpy measurement, the heat capacity was determined in a temperature range 273.15°K to 2740°K. Orig. art.

Card 1/2 UDC: 536.722:546.882

L 8991-66
ACC NR: AP5016695

has: 1 figure, 4 tables, 2 formulas.

SUB CODE: 11,20/ SUBM DATE: 030ct64/ ORIG REF: 010/ OTH REF: 006

Card 2/2

REYTLINGER, Sergey Aleksandrovich; CHEKHOVSKIY, Yuriy Vasil'yevich; MOSKALEV, N.S., kand. tekhn.nauk, retsenzent; REBINDER, P.A., akademik, red.; VAYNER, M.S., red.; RAZUMOVSKAYA, T.Ya., red.; DEMIDOV, Ya.F., tekhn. red.

[Mechanisms of the transmission of gases and liquids through concrete and methods of studying the structure of concrete pores]Mekhanizmy perenosa gazov i zhidkostei cherez beton i metody issledovaniia struktury por betona. Pod red. P.A. Rebindera. Moskva, VNIIST Glavgaza SSSR. Red.-izdatel'skii otdel, 1961. 63 p. (MIRA 15:11)
(Concrete--Testing)

LEYRIKH, V.E., kand.tekhn. nauk; CHEKHOVSKIY, Yu.V., inzh.

Methods of determining the loss of petroleum products in reinforced concrete tanks. Stroi. truboprov. 7 no.1:11-13 Ja '62. (MIRA 16:7)

(Petroleum products) (Tanks)

LEYRIKH, V.E., kand. tekhn. nauk; SIROTKINA, N.L., inzh.; KURDYASHOVA, A.I., inzh.; CHEKHOVSKIY, Yu.V., inzh.

Structure of pores and properties of cement stone. Sbor. trud. VNIINSM no.8:65-74 '63. (MIRA 17:9)

CHEKHOVSKIY, Yu.V.; LEYRIKH, V.E.; REYTLINGER, S.A.

Decrease in gas permeability of cement stones when electrolytes are added. Dokl. AN SSSR 153 no.2:405-407 N '63. (MIRA 16:12)

1. Predstavleno akademikom P.A.Rebinderom.

KASIMOV, I.K.; CHEKHOVSKIY, Yu.V.; MOSHCHANSKIY, N.A.

Methods for impregnating concrete with synthetic materials.
Stroi. truboprov. 9 no.12:18-20 D '64. (MIRA 18:3)

CHEKHOVSKIY, Yu.V.; LEYRIKH, V.E.; KAZANSKIY, V.M.

Differentiation of water in cement stone from the nature of its bonding. Koll. zhur. 26 no.3:367-372 My-Je '64.
(MIRA 17:9)

1. Kiyevskiy tekhnologicheskiy institut legkoy promyshlennosti.

CHEKHOVSKIY, Yu.V.; LEYRIKH, V.E.

Differential porosity of hardened cement. Koll. zhur. 26 no.4:518-523 Jl-Ag '64. (MIRA 17:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut stroitel'stva truboprovodov, Moskva.

CHEKHOVSKIY, Yu.V.; LEYRIKH, V.E.; KAZANSKIY, V.M.

Change in the porous structure and the nature of moisture bonding in the setting of cement stone. Koll. zhur. 27 no.1:125-129 Ja-F '65. (MIRA 18:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut magistral'nykh truboprovodov i Kiyevskiy tekhnologicheskiy institut legkoy promyshlennosti.

CHEKHOVSKOY, A.P.

Kolkhoz imeni Stalina (Stalin Collective Farm). Moskva, Sel'khozgiz, 1954. 23 p. (Glav. upr. s. -kh. propagandy i nauki M-va sel'skogo khoziaistva RSFSR. B-ka obmena opytom peredovikov sel'skogo khoziaistva)

SO: Monthly List of Russian Accessions, Vol 7, No 9, Dec 1954

GRUNSKIY, F.; DVORKIN, L; KUKSA, I. starshiy master; POLISHCHUK, Ya. CHEKHOVSKOY, M.

Information. Prof.-tekh.obr. 15 no.1:32-33 Ja '58. (MIRA 11:1)

1.Direktor blagodarnenskogo uchilishcha mekhanizatsii sel'skogo khozyaystva No.3 (for Grunskiy). 2.Nachal'nik otdela uchilishch i shkol Permskogo oblastnogo upravleniya trudovykh rezervov (for Dvorkin). 3. Zamestitel' direktora tekhnicheskogo uchilishcha No.9 (for Polishchuk). 4. Baku, Dom kul'tury trudovykh rezervov (for Chekhovskoy)

(Technical education)

CHEKHOVSKOY, P.A., gornyy inzhener.

Economic effectiveness of preparing coal for use in power engineering. Ugol' 31 no.7:23-31 Jl '56. (MLRA 9:9)

1. Direktor instituta TSentrogipreshakht.
(Coal preparation)

CHEKHOVSKOY, P.A.

ATAULIN, V.V.; VLASOVA, R.M.; DAVYDOVA, Ye.A.; DANILENKO, I.S.; DZIOV, V.A.; DUBROVIN, A.P.; YEFANOVA, L.V.; KARPENKO, L.V.; KLEPIKOV, L.N.; KOTELEV, S.V.; LUK'YANOV, N.I.; MEL'NIKOV, N.V., prof., obshchiy red.; MKRTYCHAN, A.A.; NEMTINOV, A.M.; POGOSYANTS, V.K.; SEMIZ, M.D.; SKOBLO, G.I.; SLOBODCHIKOV, P.I.; SMIRNOV, V.M.; SUSHCHENKO, A.A.; SOKOLOVSKIY, M.M.; TRET'YAKOV, K.M.; FISH, Ye.A.; TSOY, A.G.; TSYPKIN, V.S.; CHEKHOVSKOY, P.A.; CHIZHIKOV, V.I.; ZHUKOV, V.V., red.izd-va; KOROVENKOVA, Z.L., tekhn.red.; PROZOROVSKAYA, V.L., tekhn.red.

[Prospects for the open-pit mining of coal in the U.S.S.R.; studies and analysis of mining and geological conditions and technical and economic indices for open-pit mining of coal deposits] Perspektivy otkrytoi dobychi uglia v SSSR; issledovanie i analiz gornogeologicheskikh uslovii i tekhniko-ekonomicheskikh pokazatelei otkrytoi razrabotki ugol'nykh mestorozhdenii. Pod obshchei red. N.V.Mel'nikova. Moskva, Ugletekhizdat, 1958. 583 p. (MIRA 11:12)

1. Vsesoyuznyy tsentral'nyy gosudarstvennyy proyektnyy institut "Tsentrogiproshakht." 2. Chlen-korrespondent AN SSSR (for Mel'nikov).

(Coal mines and mining)

AUTHOR: Chekhovskoy, V.Ya. SOV/115-58-1-17/50

TITLE: A Differential High-Pressure Manometer (Difmanometr vysokogo davleniya)

PERIODICAL: Izmeritel'naya tekhnika, 1958, Nr 1, pp 31 - 34 (USSR)

ABSTRACT: The described differential manometer for up to 300 atm pressure was devised by the Byuro pryamotochnogo kotlostroyeniya (Office of Uniflow Boiler Building) for photorecording the pressure drop in uniflow boilers simultaneously at three different points. The manometer is built on the "membrane with mirror" principle which was suggested by N.I. Semenov (of ENIN AN SSSR), for registering the drop of atmospheric pressure. The little mirror attached to the membrane reflects the light of a small electric bulb, and this reflection moves along the manometer scale or along the slot of the camera when the membrane deflects at a pressure difference. The measurement ranges can be changed by way of exchanging the membranes. The manometer is filled with castor oil and can, for this reason, be manufactured of carbon steel instead of stainless steel. It is said that the oil also increases the accuracy of readings. There are 3 diagrams and 1 graph.

Card 1/2

1. Manometers--Design 2. Manometers--Performance 3. Pressure --Measurement

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17.4311 only 2112, 2507, 2107
11.5100

S/020/60/135/001/024/030
B004/B056

AUTHORS: Kirillin, V. A., Corresponding Member AS USSR, Sheyndlin, A. Ye., and Chekhovskoy, V. Ya.

TITLE: The Experimental Determination of the Enthalpy of Corundum (Al_2O_3) at Temperatures of From 500 to 2000°C

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 1, pp. 125-128

TEXT: It was the aim of the present paper to check the data for the enthalpy of corundum, which was obtained at the Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute) and by other research workers. The method of mixing in a massive metal calorimeter was applied, which was electrically heated by means of a ТВВ-2 (TVV-2)-type furnace. The authors describe the calibration of the calorimeter, the determination of its calorific value, and of the function $t = f(\tau)$ (τ = temperature of the heating period). The following was found on this occasion: 1) Experiments with a different course taken by the temperature

Card 1/3

The Experimental Determination of the Enthalpy of Corundum (Al_2O_3) at Temperatures of From 500 to 2000°C

S/020/60/135/001/024/030
B004/B056

curve in the main period were in agreement within the range of calibration precision. 2) The heat exchange in the calorimeter did not depend on the direction of the heat flow. The validity of the cooling equation, by means of which the heat exchange δt was calculated, was within the temperature interval $(t - t_c) \leqslant 5 - 6°C$ (t_c = convergence temperature). 3) The readings of the outside- and inside thermometer did not deviate from each other by more than ±0.1%. The temperature of the corundum samples was measured up to 1318°C by means of Pt-PtRh-thermocouples (maximum measuring error ±0.5%), above this temperature by means of an optical pyrometer (maximum measuring error ±0.9%), which was calibrated at the Vsesoyuznyy nauchno-issledovatel'skiy institut Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research Institute of the Bureau of Standards, Measures, and Measuring Instruments). The measurements were carried out between 498 and 1993°C. The results of measurements are shown in Fig. 1 and are compared with the data obtained by the Moscow Power Engineering Institute and those obtained by other research workers. The maximum deviations were ±1%. There are 1 figure and 13 references:

S/170/61/004/002/001/018
B019/B060

AUTHORS: Kirillin, V. A., Sheyndlin, A. Ye., Chekhovskoy, V. Ya.

TITLE: Experimental Determination of the Enthalpy of Corundum (Al_2O_3) at Temperatures of 500° to 2000°C

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1961, Vol. 4, No. 2, pp. 3-17

TEXT: A description is given of an experimental arrangement for measuring the enthalpy and the specific heat of substances by the mixing method. The system basically consists of a 50-kw furnace, heated by a tungsten heating conductor, and the calorimeter proper. The furnace stood above the calorimeter. The latter consisted of a copper block 118-mm in diameter and 179 mm high. Furnace and calorimeter formed a hermetically sealed system, which was either filled with air (10^{-3} mm Hg) or with argon (1.05 ata). The copper block had a bore inside and on the outside was sealed off by extra-bright finished Al sheet. The system was placed in a water thermostat. The temperature in the calorimeter was measured by a resistance thermometer, and that in the furnace by an optical pyrometer (at temperatures

Experimental Determination of the Enthalpy of Corundum (Al_2O_3) at Temperatures of 500° to 2000°C

S/170/61/004/002/001/018
B019/B060

up to 1318°C with a Pt-PtRh thermocouple). The measuring instruments were controlled at the VNII Komiteta standartov mer i izmeritel'nykh priborov (VNII of the Committee on Standards, Measures, and Measuring Instruments). The test piece may be allowed to drop from the furnace into the calorimeter, and the heat content of the test piece is calculated from the temperature changes of the Cu block. The calibration of the system is discussed in detail. In this calibration, the various forms of heating curves of the test pieces were not found to have any effect upon the experimental results. Anhydrous aluminum oxide (α-modification) was the initial material for the preparation of corundum. The test pieces were placed in an ampoule, whose heat capacity was known and which was heated with the test piece in the furnace. The ampoule was designed in a way as to fit precisely into the tapered bore of the Cu block. The enthalpy of 0°C up to a test piece temperature of t_a was calculated by the following formula:

$$i_{0°C}^{t_a} = \frac{1}{G}(H\Delta R + q_1 - q_w) + i_{0°C}^{t'_k}$$, where $H\Delta R$ is the heat introduced

Card 2/3

through the test piece into the calorimeter, G is the weight of the test piece, q_1 is the heat loss of the test piece while falling, and $i_{0°C}^{t'_k}$ is the test-piece enthalpy from 0°C up to temperature t'_k of the calorimeter system after heat compensation. Results are given in Table 1. A comparison with data supplied by other authors gave satisfactory agreement. E. N. Rodigina, K. Z. Gomel'skiy, N. B. Vargaftnik, and O. N. Oleshchuk are mentioned, and reference is made to work carried out at the filial Vsesoyuznogo instituta metrologii (Branch of the All-Union Institute of Metrology) in Sverdlovsk. There are 5 figures, 1 table, and 20 references: 11 Soviet, 1 German, and 1 US.

ASSOCIATION: Energeticheskiy institut, g.Moskva (Institute of Power Engineering, Moscow)

SUBMITTED: August 19, 1960

18.8100
21.2100

25723
S/020/61/139/003/022/025
B127/B206

AUTHORS: Kirillin, V. A., Corresponding Member AS USSR, Sheyndlin, A. Ye., and Chekhovskoy, V. Ya.

TITLE: Experimental determination of the enthalpy of molybdenum at 700-2337°C

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 3, 1961, 645-647

TEXT: The enthalpy of molybdenum having been studied only up to 1500°C, the authors continue the investigation by studying the enthalpy at high temperatures with the mixing method, applying a massive calorimeter. Tungsten heaters were used for generating the temperature. The experimental plant was evacuated to a pressure of 10^{-3} mm Hg, or filled with argon to 1.05 atm absolute pressure. The temperature was measured by platinum resistance thermometers connected to a ПМС-48 (PMS-48) potentiometer and an М21/4 (M21/4) mirror galvanometer. Temperature fluctuations were only ±0.001°C. The specimens were taken from molybdenum ingots produced by powder metallurgy, the ingots containing a

Card 1/3

maximum of 0.04-0.05 % impurities; they had the shape of a truncated cone, the surface of which was carefully polished. Temperatures up to 1327°C were measured by platinum-rhodium-platinum thermocouples, the hot junction of which was inside the specimen. Higher temperatures were measured by a pyrometer, in which case a cavity was made in the specimen in order to produce an ideally black body. The specimens were suspended in a vacuum furnace by means of a graphite ring to prevent sticking at higher temperatures. For thermal stabilization, the specimens were tempered in the vacuum furnace at 2050°C. They were heated for 3 hr, and subsequently cooled for 1.5 hr. The experiments were repeated after this thermal stabilization. Their results are tabulated. One calorie was assumed to equal 4.1840 abs.joules. The maximum error was no more than $\pm$0.4% for temperature measurement by thermocouple, and $\pm$0.9% by pyrometer at 1300-2000°C, and $\pm$1.2% at 2000-2400°C. There are 1 table and 9 references: 4 Soviet-bloc and 5 non-Soviet-bloc. The two references to English-language publications read as follows: T. A. Redfield, J. H. Hill, United State Atomic Energy Commission, ORNL - 1087; Sept. 24, 1951; A. G. Worthyng, Phys. Rev., 28, 195 (1926).

Card 2/3

25723
S/020/61/139/003/022/025
B127/B206

Experimental determination of the...

ASSOCIATION: Laboratoriya vysokikh temperatur Akademii nauk SSSR (Laboratory of High Temperatures, Academy of Sciences USSR)

SUBMITTED: May 3, 1961

Table. Experimental results on the enthalpy of molybdenum.
Legend: (1) Serial number, (2) temperature, °C, (3) $i_t - i_{0°C}$, kcal/kg.

(1) №№ п. п.	(2) T-ра, °C	(3) $i_t - i_{0°C}$, ккал/кг	(1) №№ п. п.	(2) T-ра, °C	(3) $i_t - i_{0°C}$, ккал/кг	(1) №№ п. п.	(2) T-ра, °C	(3) $i_t - i_{0°C}$, ккал/кг
1	699,3	45,58	12	1690	124,45	23	2046	158,72
2	883,3	58,82	13	1739	128,95	24	2077	160,29
3	1010,7	68,53	14	1780	133,01	25	2106	163,47
4	1199,0	83,09	15	1788	133,70	26	2165	170,95
5	1327,4	93,19	16	1854	139,48	27	2172	170,59
6	1432	101,51	17	1900	144,46	28	2235	178,10
7	1446	102,66	18	1942	147,87	29	2241	178,30
8	1536	110,40	19	1954	150,37	30	2250	179,37
9	1600	115,67	20	1970	151,63	31	2257	181,03
10	1629	118,91	21	1985	151,44	32	2337	190,22
11	1657	121,04	22	2036	156,67			

Card 3/3

34660
S/096/62/000/002/004/008
E111/E414

18.1152

AUTHORS: Kirillin, V.A., Corresponding Member AS USSR, Sheyndlin, A.Ye., Doctor of Technical Sciences, Chekhovskoy, V.Ya., Candidate of Technical Sciences

TITLE: Thermodynamic properties of tungsten in the temperature range 0 to 2400°C

PERIODICAL: Teploenergetika, no.2, 1962, 63-66

TEXT: The authors describe their experimental determination of the enthalpy of tungsten at 2000 to 2340°C. They used the method of mixtures with a massive copper calorimeter with a constant temperature jacket. The apparatus and method were described by the authors in previous papers (Ref.5: DAN SSSR, v.135, no.1,1960; Ref.6: Inzhenergo-fizicheskiy zhurnal, v.4, no.2, 1951, 3). Tungsten heaters enabled higher specimen purity to be maintained than with graphite heaters. Special measures were taken to prevent sticking of the specimens at temperatures above 2000°C. Specimen temperature was measured with a disappearing-filament optical pyrometer (estimated error ± 0.7%). The surface of specimens was kept polished throughout the series of experiments

Card 1/3

and they were weighed before and after each determination. Experiments were performed in both argon and vacuum. From the present and previous (Ref.3: Inzhenergo-fizicheskiy zhurnal, 1962) work the authors worked out empirical equations for the enthalpy and specific heat of tungsten. The results are:

enthalpy: $i_T = i_{273.15} = 5.556T + 4.935 \times 10^{-4}T^2 +$

$+ 14.9 \times 10^{-9}T^3 - 1554.8$ cal/g atom (6)

specific heat: $\mu c_p = 5.556 + 9.87 \times 10^{-4}T +$

$+ 4.47 \times 10^{-3}T^2$ cal/g atom x degree (7)

enthropy: $s_T - s_{273.15} = 12.793 \lg T + 9.87 \times 10^{-4}T +$

$+ 2.24 \times 10^{-8}T^2 - 31.440$ cal/g atom x degree (9)

From Eq.(6), (7) and (9) the smoothed values were calculated (Table 2). The authors estimate the random error in their

Card 2/3

entropy determination as ± 0.6% at 350 to 1200°C, ± 0.9% for 1000 to 2000°C and ± 1.2% for 2000 to 2400°C. From their discussion of published values the authors conclude that there is generally satisfactory agreement. There are 1 figure, 3 tables and 14 references: 5 Soviet-bloc and 9 non-Soviet-bloc. The three references to English language publications read as follows: Ref.10: H.L.Bronson, H.M.Chisholm and S.M.Dockerty. Canad. Journ. Ref., v.8, no.3, 1933, 282; Ref.12: K.K.Kelley. US Bureau of Mines, Bull. 476, 1949; Ref.13: A.G.Worthing. Phys. Rev., v.12, 1918, 199.

38059
S/170/62/000/006/006/011
B117/B138

18.8100

AUTHOR: Chekhovskoy, V. Ya.

TITLE: Thermal capacity and enthalpy of molybdenum between 0 and 2400°C

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, no. 6, 1962, 43 - 47

TEXT: The temperature field in a high-temperature heater of an experimental apparatus operating by the mixing method was studied with a thermocouple and an optical pyrometer with vanishing filament to verify its effect on the investigation results. The thermocouple could move vertically along the heater axis. Measurements with the pyrometer were made with five graphite plates or graphite cylinders threaded in starlike arrangement onto a tungsten wire at 20 mm intervals. The temperature fields determined by the two methods showed satisfactory agreement. When studying the enthalpy, 45 and 30 mm high samples were suspended in the central part of the heater. In this section of the heater, the nonuniformity of the temperature field was not greater than measurement errors of the pyrometer. The heat conductivity of the sample contributed to a certain temperature

Card 1/2

Thermal capacity and enthalpy ...

balance. These observations confirmed the assumption (V. A. Kirillin, A. Ye. Sheyndlin, and V. Ya. Chekhovskoy, DAN SSSR, 139, no. 3, 1961) that the temperature field of the heater does not affect the investigation results and, therefore, can be neglected. From experimental data quoted in the above paper empirical equations were derived for the enthalpy, thermal capacity, and other thermodynamic functions:

$$i_t - i_o = 0.05970t + 7.08 \cdot 10^{-6}t^2 + 7.7 \cdot 10^{-10}t^3 \quad (1)$$

$$\bar{c}_p = 0.05970 + 7.08 \cdot 10^{-6}t + 7.7 \cdot 10^{-10}t^2 \quad (2)$$

$$c_p = 0.05970 + 14.16 \cdot 10^{-6}t + 23.1 \cdot 10^{-10}t^2 \quad (3)$$

$$\mu c_p = 5.728 + 13.59 \cdot 10^{-4}t + 22.2 \cdot 10^{-8}t^2 \quad (4)$$

These equations are recommended for calculating the thermal capacity and enthalpy of molybdenum between 0 and 2400°C. Comparison of values calculated from these equations with the published experimental results showed good agreement for the range of moderate temperatures. There are 2 figures and 2 tables.

Card 2/3

High Temperature Lab, AS USSR, Moscow

S/170/62/005/008/003/009
B104/B102

AUTHOR: Chekhovskoy, V. Ya.

TITLE: Specific heat and enthalpy of corundum in the temperature range 500 to 2000°C

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 8, 1962, 62-65

TEXT: With the aid of experimental data obtained by V. Ya. Chekhovskoy et al. (IFZh, no. 2, 1961) empirical equations for the enthalpy and the specific heats of corundum were arrived at by a graphical method as suggested by C. H. Shomate (Journ. Amer. Chem. Soc., 66, 928, 1944):

$$i_T - i_{273.16} = 0{,}2716\,T + 1{,}29\cdot10^{-6}T^2 + 7{,}97\cdot10^{3}T^{-1} - 104{,}33, \quad (1)$$

$$\bar{c}_p = 0{,}2751 + 1{,}29\cdot10^{-6}T - 29{,}18\cdot T^{-1}, \quad (2)$$

$$c_p = 0{,}2716 + 2{,}58\cdot10^{-6}T - 7{,}97\cdot10^{3}T^{-2}, \quad (3)$$

$$c_{p|\mu} = [illegible] + 2{,}63\cdot10^{-3}T - 8{,}13\cdot10^{5}T^{-2}. \quad (4).$$

Card 1/2

S/170/62/005/008/003/009
Specific heat and enthalpy of ... B104/B102

The formulas hold between 500 and 2000°C with a maximum error of less than 1%. The values calculated, which are given in tables, can be used for calibrating instruments and for thermophysical computations. The equations also satisfactorily describe the results obtained by other authors. There are 2 tables and 1 figure.

ASSOCIATION: Institut vysokikh temperatur pri MEI, g. Moskva
(Institute of High Temperatures at MEI, Moscow)

SUBMITTED: August 29, 1961

Card 2/2

S/170/62/005/010/002/009
B112/B186

AUTHORS: Chekhovskoy, V. Ya., Shumyatskiy, B. Ya., Yakimovich, K. A.

TITLE: Experimental investigation of tungsten enthalpy over the temperature range from 350 to 2000°C

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 10, 1962, 13 - 18

TEXT: The enthalpy difference $i_t - i_o$ was experimentally determined by the mixing method (16 experiments). It has been found to vary linearly from 11.68 to 73.41 kcal/kg over the temperature range from 357.3 to 1964.0°C. The maximum error in these results was estimated at $\pm(0.6 - 0.9)\%$. The data obtained do not diverge from those of other authors by more than 1 % on the average. The experimental equipment consisted of a resistance furnace with a tungsten heater and a massive copper calorimeter in an isothermal jacket. The temperature of the sample was measured by platinorhodium-platinum thermocouples ($t < 1200$°C) and an optical pyrometer ($t > 1000$°C). There are 4 figures and 1 table.

Card 1/2 Inst. of High Temperatures of ME, Moscow

35543
S/020/62/142/006/016/019
B101/B144

18.11[✓

AUTHORS: Kirillin, V. A., Corresponding Member AS USSR, Sheyndlin, A. Ye., and Chekhovskoy, V. Ya.

TITLE: Enthalpy and specific heat of tungsten between 0 and 2400°C

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 6, 1962, 1323-1326

TEXT: The determination of enthalpy and specific heat of tungsten was extended up to 2340°C. The specimen obtained by powder metallurgy techniques was prevented from being soiled by using a furnace with tungsten, not graphite, heater. The impurity content of the specimen was less than 0.05%. The measurements were made in vacuum (10^{-2}-10^{-3} mm Hg) or in argon atmosphere. A cavity bored in the specimen was covered by a tungsten disk with a bore of 2.3 mm in diameter, and a pyrometer was used for the exact temperature measurement (absolute blackbody) between 2000 and 2400°C. The following empirical equations were found for the temperature range 0-2400°C: $i_t - i_{0°C} = 0.03170t + 2.75\cdot10^{-6}t^2 + 8.1\cdot10^{-11}t^3$ (1); $c_p = 0.03170 + 5.50\cdot10^{-6}t + 2.43\cdot10^{-10}t^2$; X

Card 1/2

Enthalpy and specific heat ...

$\mu c_p = 5.828 + 10.11 \cdot 10^{-4} t + 4.47 \cdot 10^{-8} t^2$. $i_t - i_{0°C}$ denotes the change of enthalpy (kcal/kg); c_p the true specific heat (kcal/kg·deg); μc_p the true atomic heat (cal/g-atom·deg). Basic data: atomic weight of tungsten: 183.86; 1 cal = 4.1840 absolute joules. Maximum deviation of measurements results from values calculated by Eq. (1): 0.4% between 357 and 1200°C; 0.56% between 1000 and 2000°C; 1% between 2000 and 2400°C. Good agreement was found between present results and those of other research workers whose methods are discussed briefly. There are 2 tables and 20 references: 6 Soviet and 14 non-Soviet. The four most recent references to English-language publications read as follows: K. K. Smith, P. W. Bigler, Phys. Rev., 19, 268 (1922); L. I. Bocksthaler, Phys. Rev., 25, 677 (1925); K. K. Kelley, Bureau of Mines Bull., 476 (1949); H. L. Bronson, H. M. Chisholm, S. M. Dockerty, Canad. J. Res., 8, 282 (1933).

ASSOCIATION: Laboratoriya vysokikh temperatur Akademii nauk SSSR (Laboratory of High Temperatures of the Academy of Sciences USSR)

SUBMITTED: November 30, 1961

Card 2/2

CHEKHOVSKOY, V. Ya., KIRILLIN, V. A., and SHEYNDLIN, A. YE.,

"Zntal'piya i Teploemkoct' Nekotorykh Tverdikh Veschestv pri Vec'ma Vysokikh Temperaturakh. (Enthalpy and Heat Capacity of Some Solid Substances at Very High Temperatures.)"

report presented at the Intl. Symposium on High Temperature Technology held at Asilomar, California, 8-11 Sep 63

PETROV, V.A.; CHEKHOVSKOY, V.Ya.; SHEYNDLIN, A.Ye.

Experimental determination of the integral emissivity of metals and alloys at high temperatures. Teplofiz. vys. temp. 1 no.1:24-29 Jl-Ag '63. (MIRA 16:10)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur.

S/120/63/000/001/064/072
E032/E314

AUTHORS: Chekhovskoy, B.Ya. and Sheyndlin, A.Ye.

TITLE: Laboratory furnace with a graphite heater for studies above 3 100 °C

PERIODICAL: Pribory i tekhnika eksperimenta, no. 1, 1963, 197 - 199

TEXT: Tungsten furnaces are unsuitable when the materials investigated tend to corrode tungsten at high temperatures. This can be avoided by the use of a graphite heater. Fig. 1 shows a furnace of this type. The furnace is very similar to the TBB (TVV) furnace and, in fact, the tungsten element of existing TVV furnaces can be replaced by the graphite element. The graphite heater 18 is in the form of a tube (25-33 mm in diameter, length of working region 260 mm). The lower end of the heater is in the form of a conical contact attached by means of the nut 22 to the lower current lead 21 . The tube is free to expand in a fixed graphite holder 12 . The upper current lead 8 rests on a fixed cylindrical tube 3 . The heater is surrounded by a system of radial and end screens made of graphite (11, 16, 19)

Card 1/3

Laboratory furnace ....

and by molybdenum and stainless-steel screens (10, 13, 15, 20). Other screens are at 17 and 14 (graphite). The furnace operates in a vacuum of 10^{-2} - 10^{-3} mm Hg or in an argon atmosphere of 1.05 atm up to about 2 000 °C. It is used only in an inert atmosphere at higher temperatures. A maximum temperature of 3100°C was reached at a power consumption of 35 - 36 kW. The heating element is supplied through an autotransformer AOSK-25/0.5 (AOSK-25/0.5) and a step-down transformer OSU-40/0.5 (OSU-40/0.5). The supply voltage is maintained constant to within ± 1% by a single-phase voltage-stabilizer RA-5SN-100 (RA-5SN-100). There are 3 figures.

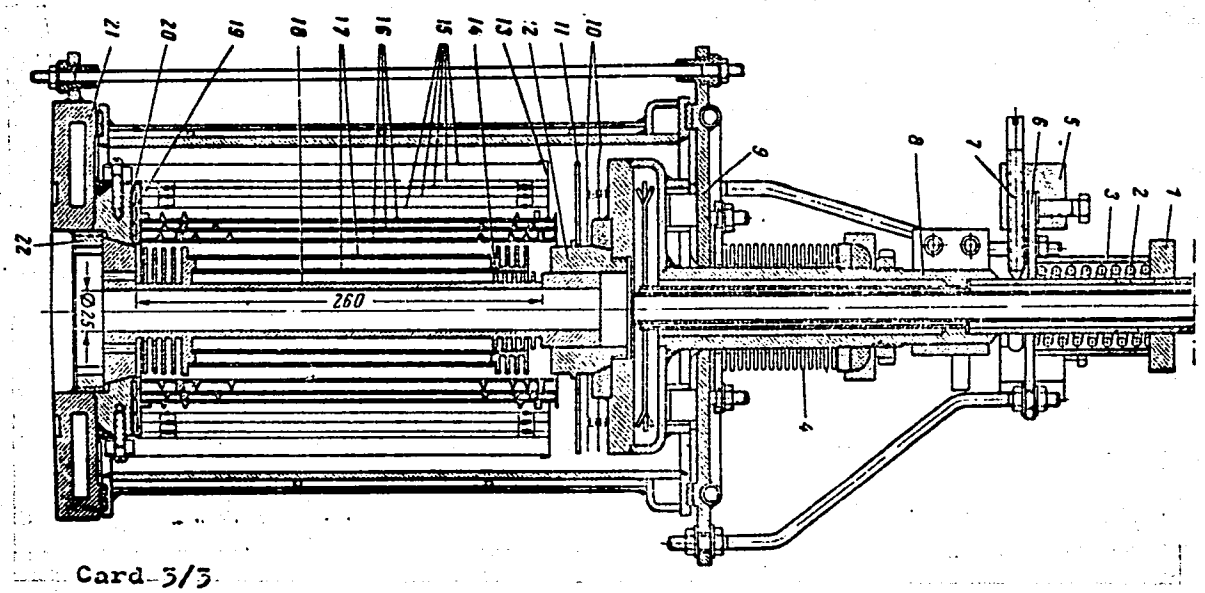
ASSOCIATION: Nauchno-issledovatel'skiy institut vysokikh temperatury (Scientific Research Institute for High Temperatures)

SUBMITTED: January 29, 1962

S/120/63/000/001/064/072
E032/E314

Laboratory furnace ....

Fig. 1:



Card 3/3

CHEKHOVSKOY, V.Ya.; SHEYNDLIN, A.Ye.

Laboratory furnace with graphite heater for investigations at temperatures up to 3100° C. Prib. i tekh. eksp. 8 no.1:197-199 Ja-F '63. (MIRA 16:5)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur.
(Furnaces)

L 11388-63 EPR/EPF(c)/EPF(n)-2/EWP(q)/EWT(m)/BDS/T-2/ES(s)-2 AEDC/AFFTC/
ASD/SSD Ps-4/Pr-4/Pu-4/Pt-4 WH/WW/K S/120/63/000/002/032/041

84

AUTHOR: Sheyndlin, A. Ye., Chekhovskoy, V. Ya., and Reshetov, L. A.

TITLE: High-temperature laboratory oven with graphite elements for research at 3000°C

PERIODICAL: Pribory i tekhnika eksperimenta, March-April 1963, v. 8, no. 2, 153-156.

TEXT: The article discusses the design and test results for a high-temperature over with graphite heaters for research on enthalpy and thermal capacity. The heating elements consist of two series-connected tubes; at 3000°C the furnace drawn about 30 kw. The temperature of the heating elements is constant along their length within 10-30°C over the 1100-2700°C range. There are three figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut vysokikh temperatur MEI (High-Temperature Scientific-Research Institute at the Moscow Power Engineering Institute)

SUBMITTED: April 28, 1962

ja/CL
Card 1/1

CHEKHOVSKOY, V.Ya.; PETROV, V.A.

Melting point of corundum. Izm. tekh. no.9:26-28 S '63.
(MIRA 17:1)

CHEKHOVSKOY, V.Ya.; SHEYNDLIN, A.Ye.

Modified furnace of the TVV type with a tungsten heater for investigations at temperatures up to 2800° C. Zav. lab. 29 no.10:1258-1259 '63. (MIRA 16:12)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur pri Moskovskom energeticheskom institute.

KIRILLIN, V.A.; SHEYNDLIN, A.Ye.; CHEKHOVSKOY, V.Ya.; PETROV, V.A.

Thermodynamic properties of tungsten in the temperature range 0 - 3500°K.
Zhur.fiz.khim. 37 no.10:2249-2257 O '63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur pri Moskovskom energeticheskom institute.

CHEKHOVSKOY, V. Ya., SHEYNDLIN, A. Ye. and PETROV, V. A

"Experimental determination of integral emissivity and monochromatic emissivity of metals at high temperatures".

Seminar on production methods, physical properties, and electron structure of refractory metals, compounds, and alloys, organized by the Institute of Powder Metallurgy and Special Alloys AS Ukr SSR, Kiev, 25-29 April 1963.
(Teplofizika vysokikh temperatur, No. 1, 1963, p. 156)

ACCESSION NR: AP4017727 S/0294/63/001/003/0462/0464

AUTHORS: Petrov, V. A.; Chekhovskoy, V. Ya.; Sheyndlin, A. Ye.

TITLE: Experimental determination of the degree of blackness of niobium in the temperature interval 1200--2500K

SOURCE: Teplofizika vy*sokikh temperatur, v. 1, no. 3, 1963, 462-464

TOPIC TAGS: niobium, blackness, degree of blackness, hemispheric blackness, monochromatic blackness, integral blackness, pyrometry, micropyrometry

ABSTRACT: Results are presented of an experimental determination of the integral hemispheric and monochromatic ($\lambda = 0.66 \times 10^{-6}$ m) degree of blackness of niobium in the temperature interval 1200--2500°K. There are very little published data on its optical properties and particularly the degree of blackness. The measurements were made on a specimen in the form of an electrically-heated thin-

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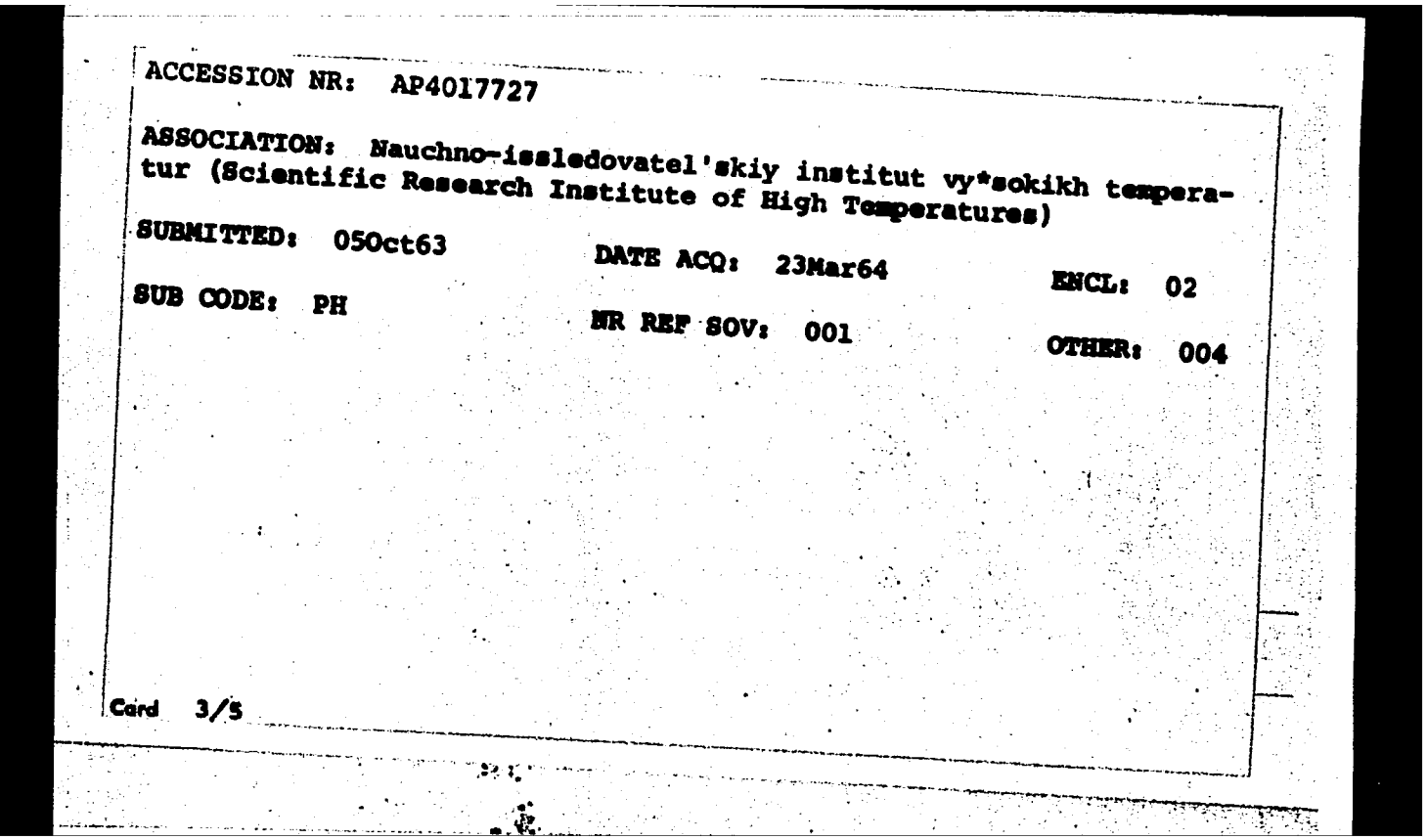
ACCESSION NR: AP4017727

wall tube with outside diameter 9 mm, wall thickness 0.5 mm and length 300 mm. The experimental setup, the apparatus, and the measurement procedure were described elsewhere (Teplofizika vy*sokikh temperatur v. 1, No. 1, 1963). All experiments were made in a vacuum 10^{-3} N/m^2. The experimental error is estimated at $\pm$4%. In addition, a check was made on the blackness of the tube when viewed from the end, as is sometimes done to determine the true temperature. The results show that the degree of blackness of a hole drilled in a tube is 0.89--0.90 and that to improve the results it is necessary to use a small hole and a micropyrometer. Both the monochromatic degree of blackness and the integral degree of blackness exhibits a noticeable increase in degree of blackness during the initial heating. The accuracy of the measurement of the monochromatic degree of blackness is estimated at $\pm$11% at 1300K and $\pm$7% at 2300K. The data are compared with those by others and the reasons for the discrepancies discussed. Orig. art. has: 2 figures and 4 tables.

Card 2/5



ACCESSION NR: AP4017727

ASSOCIATION: Nauchno-issledovatel'skiy institut vy*sokikh tempera-tur (Scientific Research Institute of High Temperatures)

SUBMITTED: 05Oct63 DATE ACQ: 23Mar64 ENCL: 02

SUB CODE: PH NR REF SOV: 001 OTHER: 004

Card 3/5

L 38510-65 EPF(n)-2/EPR/EPA(s)-2/EPA(w)-2/EWT(m)/EWP(b)/T/EWA(d)/EWP(e)/EWP(w)/EWP(t) Ps-4/Pt-10/Pu-4/Pab-10 IJP(c) WH/JW/JD/GS

ACCESSION NR: AT5007727 S/0000/63/000/000/0104/0109

AUTHOR: Sheyndlin, A. Ye.; Chekhovskoy, V. Ya.; Petrov, V. A.

TITLE: Determination of certain thermophysical properties of corundum

SOURCE: AN SSSR. Institut khimii silikatov. Silikaty i okisly v khimii vysokikh temperatur (Silicates and oxides in high-temperature chemistry). Moscow, 1963, 104-109

TOPIC TAGS: corundum, melting point determination, heat of fusion, heat capacity, enthalpy

ABSTRACT: The article describes the experimental determination of the heat of fusion of corundum, its melting point, and the enthalpy of its melt up to 2500C. An experimental calorimetric device was used for the measurements. Molybdenum ampoules in which pieces of corundum were placed were employed in the determination of the enthalpy. On the basis of the experimental data obtained, an empirical equation was derived for the enthalpy of the corundum melt in the range from the melting point to 2500C:

$$H_T - H_{273.15} = 0.4678\ T - 232.6\ \text{kcal/kg},$$

Card 1/2

L 35521-65

ACCESSION NR: AT5007727

where T is in degrees Kelvin. From this equation, the heat of fusion was found to be 254 kcal/kg or 25.8 kcal/mole, the true heat capacity being C_p = 0.4678 kcal/kg·deg. Orig. art. has: 2 figures, 1 table, and 5 formulas.

ASSOCIATION: None

SUBMITTED: 0000063 ENCL: 00 SUB CODE: MT, TD

NO REF SOV: 007 OTHER: 003

Card 2/2

ACCESSION NR: AP4037999 S/0170/64/000/005/0063/0065

AUTHOR: Sheyndlin, A. Ye.; Chekhovskoy, V. Ya.; Petrov, V. A.

TITLE: Enthalpy and specific heat of molten corundum at temperatures up to 2800K

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 5, 1964, 63-65

TOPIC TAGS: corundum, corundum enthalpy, corundum specific heat, synthetic corundum

ABSTRACT: The enthalpy and specific heat of molten synthetic corundum, 99.8—99.9% Ab_2O_3, in the 2350—2800K range have been determined at the Moscow Institute of High Temperatures. Corundum specimens were contained in evacuated thin-walled ampuls made of 99.95% pure molybdenum, and the experiments were conducted in an airtight unit in an atmosphere of pure argon at a pressure of $10.3 \cdot 10^4 n/m^2$. The maximum calculated relative error of the enthalpy measurements was about 1.2%. The obtained enthalpy data, referred to 273.15K, are in Table 1 of the Enclosure. The true specific heat

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51"

ACCESSION NR: AP4037999

of molten corundum from the melting temperature (2313—2323K) to 2800K was found to be the constant c_p = 1.957 j/g·deg.

ASSOCIATION: Institut vy*sokikh temperatur, Moskva (Institute of High Temperatures, Moscow)

SUBMITTED: 06Mar63 DATE ACQ: 09Jun64 ENCL: 01

SUB CODE: MM NO REF SOV: 004 OTHER: 003

Card 2/3

ACCESSION NR: AP4037999 ENCLOSURE: 01

Table 1. Enthalpy data

T (K)	$H_T - H_{273.15}$, j/g	T (K)	$H_T - H_{273.15}$, j/g
2350	3626	2600	4115
2400	3724	2650	4213
2450	3822	2700	4311
2500	3920	2750	4409
2550	4018	2800	4507

Card 3/3

KIRILLIN, V.A.; SHEYNDLIN, A.Ye.; CHEKHOVSKOY, V.Ya.

Enthalpy and heat capacity of silicon carbide containing 12% of free carbon in the temperature range 1100° - 2850°K. Teplofiz. vys. temp. 2 no.1:9-15 Ja-F '64. (MIRA 17:3)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur.

CHEKHOVSKOY, V.Ya.

Thermodynamic properties of corundum as a standard substance in calorimetry. Teplofiz. vys. temp. 2 no.2:296-301 Mr-Ap '64. (MIRA 17:6)

L 12440-65 EWI(m)/EPF(c)/EPF(n)-2/EPR/EWP(j)/EWP(b)/EWP(e) Pc-4/Pr-4/Ps-4/Pi-4/
Pu-4 RPL/AS(mp)-2/AFETR/SSD/AFWL/AEDC(a)/ESD(gs)/ESD(t) JD/WW/JW/JG/AT/RM/WH
ACCESSION NR: AP4047374 S/0294/64/002/005/0710/0715

AUTHORS: Kirillin, V. A.; Sheyndlin, A. Ye.; Chekhovskoy, V. Ya.; Tyukayev, V. I.

TITLE: Enthalpy and specific heat of titanium diboride in the temperature interval of 273.15 to 2600K

SOURCE: Teplofizika vysokikh temperatur, v. 2, no. 5, 1964, 710-715

TOPIC TAGS: enthalpy, specific heat, titanium diboride, calorimeter, argon

ABSTRACT: The authors carried out an experimental investigation of the enthalpy and heat capacity of TiB_2 in the temperature range of 273.15 to 2600K by the displacement method. The calorimetric device consisted of a massive calorimeter with isothermal casings. The experimental technique used was the one described by V. A. Kirillin, A. Ye. Sheyndlin and V. Ya. Chekhovskoy (Inzh.-fiz. zh., 4, No. 2, 1961). Each specimen weighed 31 grams and had the form of a cone 34 mm high and 20 or 18 mm in base diameter. The composition of the material was 69.6% Ti, 28% B and 0.97% C. All experiments were conducted in argon at a pressure of 1.05 atm. The following empirical relationships were obtained from the experimental data in the range of 273.15 to 2600K:

Card 1/2

L 12440-65

ACCESSION NR: AP4047374

$$H_T - H_{273,15} = 0{,}3005(T - 273{,}15) - 100{,}67 \lg \frac{T}{273{,}15} + \\ + 504 \exp\left(-\frac{8402}{T}\right) \text{ kcal/kg},$$

$$C_p = 0{,}3005 - \frac{3040}{T} + \frac{294 \cdot 10^6}{T^2} \exp\left(-\frac{8402}{T}\right) \text{ kcal/kg·C}.$$

Orig. art. has: 4 formulas, 3 tables, and 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut vy*sokikh temperatur (High-Temperature Scientific Research Institute)

SUBMITTED: 26May64 ENCL: 00

SUB CODE: TD NO REF SOV: 007 OTHER: 003

Card 2/2

SHEYNDLIN, A.Ye.; CHEKHOVSKOY, V.Ya.; PETROV, V.E.

Enthalpy and heat capacity of corundum up to a temperature of about 2800° K. Inzh.-fiz. zhur. 7 no.5:63-65 My '64.
(MIRA 17:6)

1. Institut vysokikh temperatur, Moskva.

CHEKHOVSKOY, V. Ya.; KIRILLIN, V. A.; SHEYNDLIN, A. Ye.; ZHUKOVA, I. A.

"Thermodynamic properties of niobium in the temperature range from 0°K to the melting point, 2740°K."

paper accepted for presentation at 3rd Symp on Thermophysical Properties, Lafayette, Ind, 22-26 Mar 65.

Inst of High Temperatures, Moscow.

KIRILLIN, V. A.; SHEYNDLIN, A. Ye.; CHEKHOVSKIY, V. Ya.; ZHUKOVA, I. A.

"Thermodynamic properties of niobium in the temperature range from $0^{o}K$ to the melting point, $2740^{o}K$."

report submitted for 3rd Symp on Thermophysical Properties, Purdue Univ, Lafayette, Ind., 22-25 Mar 65.

L 45632-65 EWT(m)/EWP(w)/EPF(c)/EWA(d)/EPR/EWP(j)/T/EWP(t)/EWP(z)/EWP(b) Pc-4/
Pr-4/P1-4/Ps-4 RPL MJW/JD/WW/JW/HW/RM

ACCESSION NR: AP5006469 S/0294/65/003/001/0057/0063

AUTHOR: Ranayev, A. M.; Chekhovskoy, V. Ya.

TITLE: Experimental determination of the coefficient of thermal conductivity of solid substances in the temperature interval 200 - 1000C

SOURCE: Teplofizika vysokikh temperatur, v. 3, no. 1, 1965, 57-63

TOPIC TAGS: thermal conductivity, stainless stell, Armco iron

ABSTRACT: A measurement procedure and an experimental installation for the determination of the specific heat of solids by a method of radial heat flow in different gaseous media whose pressure can be varied, constructed at the Nauchno-issledovatel'skiy institut vysokikh temperatur (Scientific Research Institute of High Temperatures) is described in detail. The installation is intended for the experimental determination of the thermal conductivity of solid substances both in vacuum and in atmospheres of various gases, including hydrogen. The gas pressure can be varied in the range from several hundred to 20,000 N/m^2. The method is based on producing radial heat flow in a cylindrical sample by means of an axial

Card 1/2

L 45632-65

ACCESSION NR: AP5006469

2

internal electric heater and on the Fourier equation for heat conduction. The main part of the apparatus is a molybdenum resistance furnace operating at ac and drawing approximately 2000 W at 1000°. Calibrated thermocouples are used to determine the temperature drop. The measurements of the thermal conductivity of Armco iron and 1Kh18N9T steel in the temperature interval 150 - 1500C and 500 - 840C respectively are presented and compared with results obtained by others. It is concluded from the comparison that the procedure is not subject to systematic errors, and the experimental errors were within ± 3% for Armco iron and 4.3% for the stainless steel. This accuracy is regarded as good. Orig. art. has: 4 figures, 3 formulas, and 5 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut vysokikh temperatur (Scientific Research Institute of High Temperatures)

SUBMITTED: 28May64 ENCL: 00 SUB CODE: TD, MM

NR REF SOV: 004 OTHER: 006

bjo

Card 2/2

KIRILLIN, V.A.; SHEYNDLIN, A.Ye.; CHEKHOVSKOY, V.Ya.; ZHUKOVA, I.A.

Experimental determination of the enthalpy of niobium in the temperature range 600°-2600°K. Teplofiz. vys. temp. 3 no.3: 395-400 My-Je '65. (MIRA 18:8)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur, Moskva.

(A) L 11902-66 EWT(1)/EWT(m)/EWP(w)/ETC(F)/EPF(n)-2/EWG(m)/T/EWP(t)/
ACC NR: AP6001909 EWP(b)/ETC(m) UR/0294/65/003/006/0860/0865
IJP(c) JD/JW/JG

AUTHOR: Kirillin, V.A.; Sheyndlin, A.Ye.; Chekhovskoy, V.Ya.; Zhukova, I.A.

ORG: High Temperature Research Institute (Nauchno-issledovatel'skiy institut vysokikh temperatur)

TITLE: Thermodynamic properties of niobium in the temperature interval

SOURCE: Teplofizika vysokikh temperatur, v.3, no.6, 1965, 860-865

TOPIC TAGS: niobium, thermodynamic property, enthalpy, entropy

ABSTRACT: The enthalpy and entropy of niobium in the temperature interval 0-2730K were calculated on the basis of averaged values of the actual heat capacity, using the following equations:

$$H_T - H_0 = \int_0^T c_p dT = \sum_{i=0}^{n} [1/2(c_{p,i+1} + c_{p,i})(T_{i+1} - T_i) + \Delta H_{i+1}], \quad (1)$$

$$S_T - S_0 = \int_0^{\ln T} c_p d(\ln T) = \sum_{i=0}^{n} [1/2(c_{p,i+1} + c_{p,i})(\ln T_{i+1} - \ln T_i) + \Delta S_{i+1}]. \quad (2)$$

Card 1/2 UDC: 546.882:536.63+536.722+536.75+536.77

Here H_0 and S_0 are the enthalpy and entropy at 0°K. The following equations were used for calculation of the enthalpy and entropy in the temperature interval from 273.15 to 2740°K:

$$H_T - H_0 = 5{,}499T + 6{,}328 \cdot 10^{-4} T^2 + 1354 \cdot 10^3 \exp\left(-\frac{19{,}53 \cdot 10^3}{T}\right) - 440{,}7 \text{ кал/г-ат}, \quad (5)$$

$$S_T - S_0 = 12{,}662 \lg T + 12{,}656 \cdot 10^{-4} T + 69{,}35\left(1 + \frac{19{,}53 \cdot 10^3}{T}\right)\exp\left(-\frac{19{,}53 \cdot 10^3}{T}\right) - 22{,}995. \quad (6)$$

The results of the calculations are presented in a table and in empirical equations. Orig. art. has: 7 formulas, 3 figures, and 1 table.

SUB CODE: 11,20/ SUBM DATE: 05Nov64/ ORIG REF: 005/ OTH REF: 012

Card 2/2

CHEKHOVSKOY, Yu.V.; KAZANSKIY, V.M.; LEYRIKH, V.E.

Pore structure and forms of moisture bonding in cement concrete. Inzh.-fiz. zhur. 6 no.5:50-54 My '63. (MIRA 16:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po stroitel'stvu magistral'nykh truboprovodov, Moskva.
(Concrete—Testing)

SOV/137-57-1-598

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 79 (USSR)

AUTHORS: Chekmarev, A. P., Chekhranov, V. D.

TITLE: Pass Design of a Universal System for the Rolling of Rounds (Raschet kalibrov universal'noy sistemy dlya prokatki kruglykh profiley)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1956, Vol 10, pp 3-25

ABSTRACT: A universal-pass design method is developed for medium section mills in which the last five passes alternate in accordance with the "square"-"smooth roll"-"vertical pass"-"oval"-"round" system. The same square, oval, and vertical passes may be used in rolling a wide variety of circular shapes. This is achieved by means of regulating the spacing between the rolls. Graphs and formulas for the design and construction of this versatile system are presented.

G. M.

Card 1/1

SOV/137-57-1-599

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 79 (USSR)

AUTHORS: Chekmarev, A. P., Chekhranov, V. D.

TITLE: Roll-pass Design and the Reduction Process During Rolling in Blooming Mills (Kalibrovka valkov i rezhim obzhatiy pri prokatke na blumingakh)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR, 1956, Vol 10, pp 26-43

ABSTRACT: Investigations of the roll-pass design and programming of reductions, carried out on six blooming mills in domestic plants during rolling of various grades of steel, demonstrate that the engineered programming of the reduction process does not correspond to the actual conditions of reduction, i. e., the operators of the blooming mills work more forcefully than is specified by said programming. The reductions in the first two passes which in accordance with the schedule of rolling of steel 5 in the blooming mill "A" should attain values of 80 mm, actually fluctuate between 115 and 125 mm in the first pass and between 50 and 60 mm in the second pass; rolling of an ingot with a cross section of 700 x 620/760 x 680 mm is carried out in 13 passes and involves four turning operations rather than five as

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Roll-pass Design and the Reduction Process During Rolling in Blooming Mills

specified by the plant schedule. Reductions on other blooming mills do not differ significantly from those achieved in the blooming mill "A". In the case of the blooming mill "C", the maximum reductions in the first passes during rolling of steel 3, according to the plant specifications, should amount to 80-85 mm; however, in the third pass after turning of the billet the actual reduction amounts to 110-115 mm; in rolling of steels 3 and B62, the number of passes was reduced from 17 to 15, which increased the productivity of the blooming mills. Programming of reductions on blooming mills "D", "E", and "F" does not take full advantage of the rolling capacity of the equipment. The operators of the blooming mills achieved an increase in the degree of reduction per pass and, thereby, a reduction of the number of passes. As a result of the combined experience of leading progressive operators, corrections were introduced into the rolling schedules of the blooming mill "D", and reductions per pass during rolling of steels 10, 40Kh, 45, and 35KhA were distributed more rationally so that the total number of passes could be reduced by two. A more rational distribution of reductions was achieved on blooming mill "F" during rolling of slabs of steel 65G (190 x 490 mm) and billets of steel 3 (190 x 220 mm), which decreased the total number of passes by four. In order to reduce the incidence of projections on the sides of the rolled work, a pass design was proposed employing a double draft (amounting to 25.5%

Roll-pass Design and the Reduction Process During Rolling in Blooming Mills

at the collar) which eliminated the strongly pronounced seams on the surface of the rolled work.

V. Zh.

Chekhranov, V.D.

137-1958-2-2774

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 81 (USSR)

AUTHORS: Chekmarev, A.P., Klimenko, V.M., Meleshko, V.I., Chekhranov, V.D., Vorotyntsev, Yu.V., Shafran, I.K.

TITLE: A Study of an 1150-millimeter Blooming Mill (Issledovaniye blyuminga 1150 mm)

PERIODICAL: Tr. In-ta chernoy metallurgii AN UkrSSR 1957, Vol 11, pp 152-174

ABSTRACT: A comprehensive investigation of the performance of an 1150-millimeter blooming mill showed that the actual amount of widening that occurs in the rolling of blooms and slabs is significantly greater than the customary calculations would indicate. This error in computation of the widening led to a faulty distribution of the reduction during each of the rolling passes. Measuring the pressure of the metal on the rolls and the current in the armature of the motor revealed the availability of reserve power, which could be used to increase the reduction in a given pass in the blooming mill. The greatest specific pressure in the rolling of mild and medium-carbon steels was exhibited by killed steel MZ subjected to cold upsetting. Curves of specific power consumption for the rolling

Card 1/2

137-1958-2-2774

A Study of an 1150-millimeter Blooming Mill

operation included here, should be useful in the planning and control of power use in a blooming mill. Time-and-motion studies showed the extent of and reasons for differences in the duration of passes and of the intervening pauses among various operators and made possible recommendations for cutting down production time and down time in blooming-mill operation.

V.D.

1. Rolling mills—Operation

Card 2/2

CHEKHRANOV, V.D.

137-1958-2-2790

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 84 (USSR)

AUTHORS: Klimenko, V.M., Meleshko, V.I., Chekhranov, V.D., Pavlov, V.L., Vorotyntsev, Yu.V., Bortunov, Ye.M., Nazarenko, Kh.N., Shafran, I.K.

TITLE: Increasing Blooming-mill Productivity (Uvelicheniye proizvoditel'nosti blyuminga)

PERIODICAL: Tr.In-ta chernoy metallurgii AN UkrSSR, 1957, Vol 11, pp 175-181

ABSTRACT: A comprehensive investigation of the performance of an 1150 mm blooming mill at the Dzerzhinskiy plant revealed ways in which blooming-mill output capacity could be increased. These required the adoption of certain technical and procedural measures, namely, improving the performance of the clamping gear and of the main power unit, better regulation of the heating of the metal, etc. Once this had been done and the new high-reduction runs had been inaugurated, the rolling operation could be shortened by 4-8 passes and 1-3 turnings, with a simultaneous 150 percent increase of the reduction per smooth roll and 200 percent increase of the reduction per grooved section roll. The quality of the rolling was not impaired, industrial tests showing that the incidence of rejects had declined from 1 percent to 0.6 percent.

V.D.

Card 1/1

1. Rolling mills--Production

CHEKHRANOV, V.D.

AUTHOR: Nekrasov, Z.I., Correspondent member of the Ac.Sc. Ukraine SSR, Krasavtsev, N.I. and Chekhranov, V.D., Candidates of Technical Sciences. 133-5-23/27

TITLE: Investigations of the Iron and Steel Institute of the Ac.Sc. of the Ukrainian SSR (Issledovaniya Instituta Chernoy Metallurgii AN USSR)

PERIODICAL: "Stal'" (Steel), 1957, No.5, pp. 468-469 (U.S.S.R.)

ABSTRACT: The following problems were investigated:
1) Operation of blast furnaces on elevated and high top pressures. Investigations were carried out on the Dzerzhynskiy Works on furnaces of 1 386 m^3 working volume. Top pressure was increased in stages from 0.5 - 0.6 atm. to 0.8, 0.9, and 1.0 atm. The output of furnaces was somewhat increased. The largest pressure drop per metre of height was observed in the stack and not at lower furnace levels. Observation on the gas distribution in the furnace throat did not confirm that with increasing top pressure the peripheral gas flow is increased. In 1956, one of the furnaces was operated at top pressures of up to 1.3 atm. The furnace operation under these conditions was not stable as 8 times a day the pressure was lowered for casting periods. It is concluded that the difficulties encountered during casting with top pressure of 1.3 atm. are not insurmountable.

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Investigations of the Iron and Steel Institute of the Ac.Sc. of the Ukrainian SSR. (Cont.) 133-5-23/27

2) The production of self-fluxing sinter from the Kerchensk concentrates. The production of sinter with CaO/SiO_2 ratio of up to 1.4 was investigated. It was established that the increasing basicity of the sinter from 0.23 to 1.4 is not accompanied by an improvement in the reducibility of sinter.

3) Experimental steel making from pig produced from Kerchensk ores in a converter with an application of oxygen. This is a long term research project aiming at establishing a rational method of steel making from high phosphorous pig. In a series of laboratory experiments under various conditions of oxygen supply the possibility of extensive dephosphorisation at a high carbon content in the metal and the usual content of iron oxides in slag was established.

4) An investigation of merchant and wire drawing mills. The investigation was carried out in order to establish possible methods of increasing the output of mills. It was shown that rolling with clamping allows increasing the angle of grip in reducing stands by $3-5^{\circ}$ and more and thus increases the degree of reduction by 15-20%. The latter will permit decreasing the number of passes. A new design of finishing and pre-finishing

Card 2/4 stands for wire drawing mills of the Petrovsk and Dzerzhynskiy

Investigations of the Iron and Steel Institute of the Ac.Sc. Ukraine SSR. (Cont.) 133-5-23/27

Works was developed. Some problems in mechanisation and automation of merchant and wire mills were also investigated.
5) The development and an investigation of the technology of rolling economic profiles. The possibility of rolling discs for motor car wheels was established.
6) An increase in the output of a blooming mill by an improved utilisation of the mill driving motors. As a result of investigations carried out during the last few years some recommendations were given to the Dzerzhinsk and Petrovsk works regarding changes in blooming mill practice which resulted in a 10-15% increase in the output.
7) Thermal treatment of wheels for railway cars. The technology of thermal treatment from induction heating was developed. Gipromez designed equipment for treating 40 000 wheels per year for the K. Liebknecht Works.
8) The mechanism of the influence of gaseous and liquid media on the graphitisation of cast iron. The problem was investigated and it was established that the mechanism of acceleration of graphitisation during surface oxidation is related to the formation of vacancies in the surface zone.
9) An investigation of the influence of silicon on austenite

Card 3/4

Investigations of the Iron and Steel Institute of the AcSc. of the Ukrainian SSR. (Cont.) 133-5-23/27

and entectoidal transformation of cast iron. Theoretical investigations of the system Fe-C-Si indicated that during the crystallisation of cast iron and during entectoidal transformation inter-crystalline segregation of silicon is possible. The results obtained may be utilised when developing the technology of thermal treatment of grey and magnesium inoculated cast irons.

10) The use of low carbon cast iron for casting balls for ball mills. As a result of this work, balls are being made by casting in chill moulds. Their hardness 450-500 H_B at a carbon content of 2.5 - 2.8%. The metal for casting was produced in an oxygen blown converter.

11) The use of oxygen for melting cast iron reverbatory furnaces. Melting of high silicon cast iron scrap was considerably speeded up by the use of oxygen. The use of oxygen for melting cast iron for rolls increased the output of the furnace by about 20% and decreased the consumption of fuel by 20-25% and the cost of production by about 15 Roubles/Ton. The above practice is being introduced on the Dneptropetrovsk works producing cast iron rolls.

AVAILABLE:

Card 4/4

SOV/133-59-3-17/32

AUTHORS: Chekmarev, A.P., Academician, Ukrainian Academy of Sciences; Meleshko, V.I., Pavlov, V.L., Chekhranov, V.D., Candidates of Technical Sciences and Tsukanov, G.E., Shafran, I.K., Engineers, Ivanin, M.P., Senior Operator

TITLE: Rolling of Twin Ingots on a 1150 Blooming Mill (Prokatka sdvoyennykh slitkov na bluminge 1150)

PERIODICAL: Stal', 1959, Nr 3, pp 243 - 247 (USSR)

ABSTRACT: A rolling practice of rolling two ingots (in line one after the other) into blooms and slabs introduced at the Dzerzhinskiy Works at the end of 1957 is described. Changes in the roll passes made in 1958 are shown in Figures 1 and 2; characteristic dimensions and weights of rolled ingots - Table 1; rolling conditions during simultaneous rolling of two ingots into blooms - Table 2 and into slabs - Table 3. The operation of the mill under the above rolling conditions was investigated in co-operation with the Iron and Steel Institute of the Ac.Sc.Ukrainian SSR. Examples of the oscillographs obtained, indices of the loads and rolling velocities on rolling single and twin ingots are shown in Figures 4 and 5 and Tables 4 and 5, respectively. The experience of this type of rolling practice indicated that it is advantageous to apply it on all blooming mills as a

Card1/2

Rolling of Twin Ingots on a 1150 Blooming Mill

15-30% increase in the output (depending on the type of ingot and dimensions of blooms and slabs) can be obtained. This increase is mainly due to a decrease in the idling time. By maintaining correct rolling velocities the occurrence of shocks in the main mill line (when the grip of the second ingot takes place during the retardation of the motor) can be avoided. When introducing twin-ingot rolling in existing mills, it is necessary to introduce protective measures from overloading of asynchronous and rolling motors according to heating conditions. When designing new mills or reconstructing an existing mill, the possibility of rolling twin ingots should be taken into consideration. For this purpose, an increase in the power of motors and an increase in the length of the manipulator is necessary. There are 5 figures and 5 tables.

ASSOCIATIONS: Institut chernoy metallurgii AN USSR (Institute Ferrous Metallurgy, AS UkSSR) and zavod im. Dzerzhinskogo (im. Dzerzhinskiy Works)

CHEKHRANOV, V.D.

(10)

PHASE I BOOK EXPLOITATION SOV/3611

Dnepropetrovsk. Metallurgicheskiy institut

Obrabotka metallov davleniyem (Metal Forming) Khar'kov, Metallurgizdat, 1960. 326 p. (Series: Its: Nauchnyye trudy, vyp. 39) 2,100 copies printed.

Ed.: A.P. Chekmarev; Ed. of Publishing House: R.A. Belina; Tech. Ed.: S.P. Andreyev.

PURPOSE: This collection of articles is intended for technical and scientific personnel in metallurgy and in mechanical engineering. It will also be of interest to designers of rolling equipment.

COVERAGE: This collection of articles treats the theory of rolling. It discusses such factors as the total and the unit pressures of the work on rolls, moments of rolling, forward slip, spread, etc. It also includes results obtained from investigation of rail quality, rolling of cast iron sheets, and other problems. No personalities are mentioned. References follow each article.

CHEKHRANOV, V.D., kand.tekhn.nauk

New channel for the river of fire. Znan.ta pratsia no.3: 6-8 Mr '60. (MIRA 13:6)

1. Uchenyy sekretar' Instituta chernoy metallurgii AN USSR.
(Metallurgy)

S/137/61/000/006/031/092
A006/A101

AUTHORS: Chekmarev, A.P., Klimenko, V.M., Meleshko, V.I., Saf'yan, M.M., Chekhranov, V.D., Rabinovich, S.N.

TITLE: Pressure on rolls in rolling on a slab mill

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 6, 1961, 3, abstract 6D13 ("Nauchn. tr. Dnepropetr. metallurg. in-t", 1960, no. 39, 93 - 103)

TEXT: The authors describe methods and results of investigating the pressure of metal on horizontal and vertical rolls of a slab mill at the "Zaporozhstal'" Plant. The investigation was carried out in 1954. The pressure on the rolls was measured with the aid of dynamometers. The results and data obtained from the rolling of soft-grade and stainless steel slabs show, that the magnitudes of full pressure on the horizontal rolls are relatively uniformly distributed over the passes. Maximum pressure when rolling stainless steel is 1,350 - 1,450 tons, and 900 - 1,400 tons when rolling soft steels. The distribution of pressure over the passes on vertical rolls without resetting them, is non-uniform; pressure is considerably higher in even passes than in odd ones. In rolling

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S/137/61/000/006/031/092
A006/A101

Pressure on rolls in rolling on a slab mill

with resetting of vertical rolls, the distribution of pressure over the passes is relatively uniform. Maximum pressure is 300 - 350 tons on soft steels and 700 - 750 tons on stainless steels.

T. Davydov

[Abstracter's note: Complete translation]

Card 2/2