

S/560/62/000/012/011/014
1046/1246

3,5120.

AUTHOR:

Pokhunkov, A.A.

TITLE:

The variation of the average molecular weight of air in night-time atmosphere at altitudes of 100 to 210 km from mass-spectrometric measurements

SOURCE:

Akademiya nauk SSSR. *Iskusstvennyye sputniki Zemli*, no. 12, Moscow. 1962, 133-140

TEXT: Comparison of mass-spectrometric measurements in the 100 km $\leq h \leq$ 210 km atmospheric layer carried out on an analyzer with a long narrow inlet pipe (1959, recombination in the incoming O_1 stream is equal to the recombination in the reflected stream) and on an analyzer with a short wide inlet pipe (1960, minimum recombination in the incoming stream) shows that the actual O_1 concentration in the atmosphere is equal to the O_1 concentration measured on the analyzer, multiplied by a corrective factor $k = 1.60 \pm 0.25$. Application of this result to the experimental data shows that the relative concentration of O_1 increases fivefold between $h=100$ km and $h=210$ km (65 \pm 20% of N_2 concentration at 210 km); the relative concentration of O_2 at $h=100$ km is twice its concentration at

Card 1/2

3.5170

41913
S/560/62/000/013/009/009
I046/I242

AUTHOR: Pokhunkov, A.A.

TITLE: Gravitational separation, composition, and structural parameters of the night-time atmosphere at altitudes from 100 to 210 km

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli. no.13, Moscow, 1962, 110-118

TEXT: A 5-stage radiofrequency mass-spectrometer, launched in a rocket on September 23, 1960, at 00:56 local time in intermediate latitudes in the USSR, recorded 101 mass spectra of atmospheric gases at altitudes from 100 to 210 km. The minimum registrable current was 4.10^{-14} A. The mass spectra showed

Card 1/3

S/560/62/000/013/009/009
I046/I242

Gravitational separation....

peaks at 1,2,12,14,16,17,18,28,29,30,32,34,36,40 and 44 a.m.u., identified with H, H₂, C, N, O, OH, H₂O, N₂, N₁₄N₁₅, NO, O₂, O₁₆O₁₈, A₃₆, A₄₀, CO₂, and N₂O, respectively. The I(A)/I(N₂) ratio indicates gravitational separation of atmospheric gases at altitudes $h > 100$ km (at least in the intermediate and subpolar regions); the concentration of N does not exceed 1-2% of N₂ at $100 \text{ km} \leq h \leq 210 \text{ km}$; the concentration of N₁₄N₁₅ is $(7.6 \pm 0.6) \cdot 10^{-3}$ relative to N₂ at $100 \text{ km} \leq h \leq 150 \text{ km}$; the concentration of O₁₆O₁₈ is $(4.1 \pm 0.6) \cdot 10^{-3}$ relative to O₂ at $100 \text{ km} \leq h \leq 126 \text{ km}$; $P_{\text{H}_2\text{O}} = 3 \cdot 10^{-7}$ mm Hg, i.e., 0.6% of the atmospheric pressure at $h \geq 100$ km (maximum partial pressure attained at $h = 115$ km); in the night-time, free OH concentration at $h > 100$ km does not exceed $6 \cdot 10^{-3}$ % of all gases; all OH registered by the apparatus is the dissociation product of H₂O in

Card 2/3

L 18189-63 EPF(c)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pr-4 JD
ACCESSION NR: AP3007344 S/0293/63/001/001/0147/0155

AUTHOR: Pokhunov, A. A.

TITLE: On the distribution of helium, nitrogen, and argon in the
terrestrial atmosphere to the height of 430 km

SOURCE: Kosmicheskiye issledovaniya, v. 1, no. 1, 1963, 147-155

TOPIC TAGS: gas composition, upper atmosphere, mass spectrometer,
spectral range, atomic mass unit, analyzer, rocket axis, mass spec-
trogram, molecular oxygen, molecular nitrogen, argon, gravitational
distribution

ABSTRACT: In 1961 the first measurements of gas composition in
upper atmospheric layers to the height of 430 km were carried out
in the USSR. The rocket was equipped with a MKh6401 mass spectrometer
which was able to analyze gases of two spectral ranges: from 1 to 4
and from 12 to 60 atomic mass units. The analyzer of the mass spec-
trometer was erected parallel to the rocket axis and located beneath
a conic cap on the rocket head. The cap was dropped by signal at a
height of 100 km and the analyzer was exposed to the atmosphere. A

Card 1/4

L 18189-63

ACCESSION NR: AP3007344

8

special system telemetered the mass spectrograms to the earth. Analysis of the mass spectrograms showed the presence of ions of N^+ , O^+ , NO^+ and O_2^+ at heights of 130 to 430 km. The mass spectrograms showed $(1.7 \pm 0.8) \cdot 10^3/cm^3$ He^+ at a height of 370 km. The concentration of these ions increased with height, reaching $(7 \pm 2) \cdot 10^3/cm^3$. No ion peak with the mass number 4 was recorded at heights from 130 to 370 km. The gases O_1 , N_2 , O_2 , and Ar were recorded at heights of more than 130 km. Molecular oxygen, O_2 , was found at a height of 200 km. Neutral N_2 was found up to heights of 300 km. The distribution of N_2 concentration is determined by the barometric formula, and atmospheric temperature is computed using transformed formulas. Numerical results are given in tabular form. Neutral nitrogen molecules make up a high percentage of the atmospheric contents and are there in the undissociated state. The gases in the upper layers form gravitational distribution layers. "The author thanks B. A. Mirtov and S. M. Poloskov for their unceasing concern with this work and the discussion of the results, M. N. Isakov for his useful criticism, and A. A. Perno, S. V. Vasyukov, G. I. Podsablyayeva, P. F. Starostina, and S. V. Gorbunov for their help in preparation of this paper. Orig. art. has: 1 table, 4

Card 2/4

L 18189-63

ACCESSION NR: AP3007344

figures, and 15 formulas.

ASSOCIATION: none

SUBMITTED: 25Dec62

DATE ACQ: 21Oct63

ENCL: 01

SUB CODE: AS

NO REF SOV: 008

OTHER: 008

Card 3/A

POKHUNKOV, A.A.

Mass-spectrometric measurements of the distribution of
He⁺, N⁺, O⁺, N₂⁺ and O₂⁺ ions in the atmosphere to an elevation
of 430 km. Kosm. issl. 1 no.2:267-270 S-0 '63. (MIRA 17:4)

S/203/63/003/002/008/027
D207/D307AUTHOR: Pokhunkov, A.A.

TITLE: On the possibility of measuring the absolute concentrations of atomic gases in the upper atmosphere with a radio-frequency mass spectrometer

PERIODICAL: Geomagnetizm i aeronomiya, v. 3, no. 2, 1963, 252-261

TEXT: When the absolute concentrations of atomic gases are measured at heights above 100 km it is necessary to correct for the possible recombination of atoms at the inner surfaces of the mass-spectrometer analyzer. The present paper gives a theoretical derivation of the correction coefficient which allows for this recombination. The calculated and experimental values of the correction coefficient were found to be in agreement. It is also shown that a radio-frequency mass spectrometer with an analyzer similar to MX6403 (MKh6403) can be used to investigate not only the composition of chemically inert gases (such as N₂, Ar, CO₂, O₂, He, Ne, H₂, H₂O)

Card 1/2

On the possibility of measuring ...

S/203/63/003/002/008/027
D207/D307

but also for accurate quantitative measurements on chemically active atomic components of air at high altitudes. Acknowledgements are made to B.A. Bagaryatskiy, B.A. Mirtoy and S.M. Poloskov for valuable advice, and to G.I. Podsoblyayeva for carrying out the numerical calculations. There are 5 figures.

ASSOCIATION: Institut prikladnoy geofiziki (Applied Geophysics Institute)

SUBMITTED: October 10, 1962

Card 2/2

L 00806-67 FSS-2/EWT(1)/EWT(m)/FCC GW

ACC NR: AT6023726

SOURCE CODE: UR/2831/65/000/014/0026/0040

AUTHOR: Pokhunkov, A. A.

415

ORG: none

B+1

TITLE: Mass-spectrometric measurements of the neutral composition of the earth's atmosphere at altitudes of 100-430 km

SOURCE: AN SSSR. Mezhdunarodstvennyy geofizichesky komitet. V razdel programmy MGG: Ionosfera. Sbornik statey, no. 14, 1965. Ionosfernyye issledovaniya, 26-40

TOPIC TAGS: geophysic rocket, atmospheric ion concentration, atmospheric sampling, mass spectrometry

ABSTRACT: Results are given of four experiments carried out to study the neutral composition of the atmosphere with mass-spectrometers launched on geophysical rockets. The measurements were made in the middle latitudes of European Soviet Union at altitudes of 94 to 211 km during July 1959, 100-210 km during September 1960, and 130-430 km in November 1961. An analysis of the results showed that gravitational separation of the Ar and N₂ gases occurs in the atmosphere above 105-110 km. The main component determining the density of the atmosphere up to heights of about 280 km is molecular nitrogen. Atomic

Card 1/3

L 00806-67

ACC NR: AT6023728

nitrogen up to 210 km is present in the atmosphere in a quantity less than 2% of the concentration of molecular nitrogen. The existence of atomic oxygen in the atmosphere above 100 km was confirmed experimentally; its distribution was obtained, and above 120 km it corresponds to gravitational separation between O_1 and N_2 . It becomes the predominating atmospheric component with respect to density above about 280 km. Molecular oxygen is present in the atmosphere above 100 km, and its altitude distribution corresponds to gravitational separation between O_2 and N_2 . The altitude distribution of the absolute concentrations of N_2 , O_2 , and O_1 , of the average molecular weight, density, temperature, and pressure in the atmosphere in the 100--210 km range was obtained for middle latitudes in the experiment carried out at midnight in September 1960. The distribution of the N_2 concentration and temperature of the atmosphere in the 130--430 km range was derived. An increase of atmospheric temperature from 230K at 100 km to about 1500K at 325 km was experimentally confirmed. The limiting values of the concentrations of minor atmospheric admixtures (NO , H_2O , OH , H_1 , H_2 , and He) were determined. The value of NO did not exceed 0.1% of the concentration of N_2 in the 130--180 km range; the maximal value of the partial pressure of H_2O at 115 km did not exceed $3 \cdot 10^{-7}$ mm Hg, or 0.6% of the total atmospheric pressure; the content of the hydroxyl OH above 100 km did not exceed $6 \cdot 10^{-3}\%$ of the total atmospheric pressure; the concentration of H_1 had a value of the order of 10^8 particles/cm³; the concentration of H_2 above 100 km was $3 \cdot 10^7$ particles/cm³; and the content of He^+ ions in the 100--210 km range did not exceed 10^2 ions/cm³. At 100--130 km magnesium oxide of meteoric

Card 2/3

L 00806-67

ACC NR: AT6023726

origin was found. Ionized helium He⁺ was detected above 370 km. Orig. art. has: 3 tables and 8 figures.

⁰⁴
SUB CODE: 08/ SUBM DATE: none/ ORIG REF: 025/ OTH REF: 014

Card 3/3 vlr

POKHVALINSKIY, S.N.

Standardization at the "Krasnoe Sormovo" Plant. Standartizatsiia
29 no.3:56-58 Mr '65. (MIRA 18:5)

1. Nachal'nik otdela standartizatsii i normalizatsii na zavode
"Krasnoye Sormovo".

POKHVALENSKIY, V.F.

POKHVALENSKIY, V.P.: Investigation of a farm continuous milking line". Moscow, 1955. Joint Academic Council, All-Union Sci Res Inst for the Mechanization of Agriculture; and All-Union Sci Res Inst for the Electrification of Agriculture. (Dissertations for the Degree of Candidate of Technical Sciences).

SO: Knizhnava letois' No 45, 5 November 1955. Moscow.

1. Chlen-korrespondent Vsesoyuznoy Akademii sel'skokhozyaystvennykh nauk im. V.I. Lenina
BREMER, G.I., doktor tekhn.nauk, prof.; GALDIN, M.V., inzh.; DEMIN, A.V.,
kand.tekhn.nauk; ZYABLOV, V.A., kand.tekhn.nauk; KAPLUNOV, M.M.,
inzh.; KASHEKOV, L.Ya., inzh.; KOROLEV, V.F., kand.tekhn.nauk;
KRASHOV, V.S.; KULIK, M.Ye., kand.tekhn.nauk; MAKAROV, A.P., inzh.;
NOVIKOV, G.I., kand.tekhn.nauk; NOSKOV, B.G., inzh.; OLENEV, V.A.,
kand.vet.nauk; OSTANKOV, V.P., inzh.; PERCHIKHIN, A.V., inzh.;
POKHVALENSKIY, V.P., kand.tekhn.nauk; SERAFIMOVICH, L.P., kand.
tekhn.nauk; SMIRNOV, V.I., kand.tekhn.nauk; URVACHEV, P.N., kand.
tekhn.nauk; FADEYEV, N.N., inzh.; FATEYEV, Ye.M.; KRYUKOV, V.L.,
red.; VESKOVA, Ye.I., tekhn.red.

[Reference book on the mechanization of stock farming] Spravochnaia
kniga po mekhanizatsii zhivotnovodstva. Moskva, Gos.izd-vo sel'khoz.
lit-ry, 1957. 678 p. (MIRA 10:12)

1. Chlen-korrespondent Vsesoyuznoy Akademii sel'skokhozyaystvennykh
nauk im. V.I.Lenina (for Krasnov, Fateyev).
(Farm equipment) (Stock and stockbreeding)

POKHVALIN, fnu

Physicians

Aleksandr Anatol'evich Martinkevich; an obituary. Pokhvalin and others., Vest. ven. i dermat., No. 1. 1952.

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

SPERANSKAYA, Ye.F.; POKHVALITOVA, T.G.

Conditions for the formation of H_2W . Zhur.neorg.khim. 10
no.11:2393-2395 N. '65. (MIRA 18:12)

1. Kazakhskiy gosudarstvennyy universitet. Submitted May 5,
1964.

POKHVALIN, V. D.

Fortieth anniversary of the Soviet Red Cross. *Zhurnal Ros. Feder.*
2 no. 11:3-9 N '58 (MIRA 11:12)

1. Predsedatel' Tsentral'nogo komiteta Obshchestva Krasnogo
Kresta RSFSR.
(RED CROSS)

POKHVALIN, V.P. (Moskva)

Sanitation group in the factory. Sov.zdrav. 17 no.11:27-31 #58
(MIRA 11:10)

(INDUSTRIAL HYGIENE,
in Russia (Rus))

POKHVALOV, Yu. Ye.; KRONIN, I. V.; KURGANOVA, I. V.

"Investigation of single-phase convective heat transfer in tube with high heat fluxes (to 21×10^6 kcal/m² hr) for water and ethyl alcohol."

report submitted for 2nd All-Union Conf on Heat & Mass Transfer, Minsk, 4-12 May 1964.

Moscow Engineering & Physical Inst.

POKHVISNEV, A.N.

SOLOMAKHIN, I.S., kandidat tekhnicheskikh nauk; POKHVISNEV, A.N., professor,
doktor tekhnicheskikh nauk.

Some problems of the kinetics of iron ore reduction. Sbor. Inst.
stali no.35:376-388 '56. (MLRA 10:8)

1. Kafedra metallurgii chuguna.
(Iron--Metallurgy) (Iron oxides)

POKHVISNEV, A.N., doktor tekhn. nauk, prof.; SAVEL'YEV, B.A., inzh.

Mechanism of pellet hardening during the roasting process [with
summary in English]. Stal' 18 no.2:105-109 F '58. (MIRA 11:3)

1. Moskovskiy institut stali.
(Sintering)

0A

Equilibrium in the system $H_2SO_4-(NH_4)_2SO_4-H_2O$ at 99.3° . N. V. Shishkin and E. D. Pokhvalenski. *J. Gen. Chem. (U. S. S. R.)* 8, 1125-30 (in English, 1931) (1938).—At 98.3° concns. of H_2SO_4 and $(NH_4)_2SO_4$, resp., in wt. % in the liquid phase are: 0-49.45, 6.75-48.87, 14.73-40.93 (the solid phase consists of $(NH_4)_2SO_4$, 20.45-54.27 (solid phase $(NH_4)_2SO_4 + [(NH_4)_2SO_4 \cdot H_2SO_4]$, 23-53.28, 27.16-54.01, 29.81-54.7, 32.43-56.23, 34.21-57.68, 35.5-57.5 (solid phase $[(NH_4)_2SO_4 \cdot H_2SO_4]$, 35.9-58.53 (solid phase $[(NH_4)_2SO_4 \cdot H_2SO_4 + NH_4HSO_4]$, 39.39-52.36, 44.4-46.94, 47.18-42.78, 52.8-41.26, 54-42.3, 54.55-43.71, 55.16-44.15, 55-45 (solid phase $(NH_4)_2HSO_4$). S. L. Madorsky

ASB-55A METALLURGICAL LITERATURE CLASSIFICATION

627

POKHVALIN, V.

In the governmental manner. Voenn. znan. 41 no.1:16-17 Ja '65.

(MIRA 18:2)

1. Predsedatel' Tsentral'nogo komiteta Obshchestva Krasnogo Kresta
RSFSR.

По Квонту, В. В.

POKHVALIN, V.P.

For joint operations. Zdrav. Ros. Feder. 1 no.1:10-14 Ja '57.

(MIRA 11:2)

1. Predsedatel' Tsentral'nogo komiteta obshchestva Krasnogo Kresta
RSFSR.

(RMD CROSS)

POKHVALIN, V.P.

*Permanent committees of public health and social security of
local soviets of workers' deputies. Sov. zdrav. 18 no.3:63-64
'59. (MIRA 12:3)
(SOVIETS) (PUBLIC HEALTH)

KOBO ORTS, Kh. [Cobo Orts, J.]; PIKUS, Z.R.; POKHVALINA, I.M.;
TSIMMERMAN, M.G.; TURBIN, T.N., retsenzent; VOSKOBOYNIK, D.I.,
doktor tekhn.nauk, nauchnyy red.; PUICH-TORRES, Kh. [Puig Torres, J.],
insh., red.; SOBOLEVA, N.M., tekhn.red.

[Concise Spanish-Russian and Russian-Spanish scientific and technical
dictionary] Kratkii ispanko-russkii i russko-ispankii nauchno-
tekhnicheskii slovar'. Nauchn.red. D.I.Voskoboinik. Red.K.Puich-Torres.
Moskva, Akad.nauk SSSR, In-t nauchn.informatsii, 1960. 438 p.

(MIRA 13:10)

(Spanish language--Dictionaries--Russian)
(Russian language--Dictionaries--Spanish)
(Technology--Dictionaries)

POKHVALINSKAYA, E.P.,
E. V. BRITZKE, (Trans. Sci. Inst. Fertilisers, Moscow, 1928,
No. 51, 5-79)

POKHVALINSKAYA, E. P.,
E. V. BRITZKE, (Fertilisers and Yields, Russia, 1929,
69-71)

POKHVALITOVA, T.G.; SPERANSKAYA, Ye.F.

Reaction of compounds of the sixth group of elements with mercury. Part 1: Molybdenum. Izv. vys. ucheb. zav.; khim. i khim. tekhn. 8 no.1:11-16 '65. (MIRA 18:6)

1. Kazakhskiy gosudarstvennyy universitet imeni Kirova, kafedra analiticheskoy khimii.

ACC NR: AP7012428

SOURCE CODE: UR/0075/66/021/009/1033/1041

AUTHOR: Pokhyalitova, T. G.; Speranskaya, Ye. F. -- Speranskaya, E. F.;
Nasonkina, N. M.

ORG: Kazakh State University im. S. M. Kirov, Alma-Ata (Kazakhskiy
gosudarstvennyy universitet)

TITLE: Kinetics of the reactions of hexavalent chromium with metallic
mercury

SOURCE: Zhurnal analiticheskoy khimii, v. 21, no. 9, 1966, 1033-1041

TOPIC TAGS: chromium, mercury, chemical reduction

SUB CODE: 11,07

ABSTRACT: The kinetics of the reduction of chromium (VI) by mercury in solutions of various acids was investigated. Data are presented for hydrochloric and sulfuric acids. The solutions studied were thermostated at $20 \pm 0.5^\circ$. In the course of reduction, the potentials of mercury and the solutions were measured by the compensation method (R-307 potentiometer). The amount of reduced chromium was determined as the difference between the amount of chromium (VI) originally presented and that remaining in the solution. The form of the chromium in solution was found by spectrophotometric analysis. Spectral characteristics of the original solutions of bi-, tri-, and hexavalent chromium were recorded in advance

Card 1/2

UDC: 543.70

0932 1372

ACC NR: AP7012428

under the set of conditions studied.

The absorption spectrum of hexavalent chromium is characterized by the presence of one maximum (360 nanometers, 10N HCl), the position of which is practically independent of solution dilution. Spectral characteristics of solutions of trivalent chromium contain two maxima (460 and 640 nanometers, 10N HCl), the position of which depend on the hydrochloric acid concentration. With decrease in hydrochloric acid concentration, the position of the maxima is symmetrically shifted toward the short wavelength side (420 and 600 nanometers, Orig. art. has: 6 figures, 3 formulas and 2 tables. [JPRS: 40,422]

2/2

POKHVALOV, Ye.P., inzh.

Greater use of advantages derived from standardization in shipbuilding.
Sudostroenie 29 no.1:58-61 Ja '63. (MIRA 16:3)
(Shipbuilding)

AUTHOR: Pokhvalov, Ye.P., Engineer SOV/28-58-6-5/34

TITLE: A Plan of Work on Standardization and Normalization in Ship Building (Plan rabot po standartizatsii i normalizatsii v sudostroyenii)

PERIODICAL: Standartizatsiya, 1958, Nr 6, pp 22-26 (USSR)

ABSTRACT: In the ship building industry of the USSR, during the years 1959-1965, more than 1,500 state standards are to be developed. They concern the parameters and powers of mechanical installations on ships: mechanical and electrotechnical equipment, ship hulls, compartments, fastening of devices, insulation, etc. Life boats will be manufactured from light alloys and plastics which may be used for several types of ships. Electric winches, furniture for ship compartments, turbine and diesel generators for electric power, stations on ships, condensation and boiler pumps, high-pressure and electric equipment, etc. will also be standardized. For the materials used, as well as for tech-

Card 1/2

SOV/18-58-6-5/34

A Plan of Work on Standardization and Normalization in Ship Building

nological devices applied in ship building, standards should also be developed. Some organizations should be centralized.

ASSOCIATION: Godudarstvennyy komitet po sudostroyeniyu (State Committee for Ship Building)

Card 2/2

POKHVIDOV, Ye.S.; SERBINOVSKIY, G.V.

Power circuits for high buildings. Elektrichestvo, '52, No.11.
11-16. (MIRA 5:11)
(BEA 56, no.666:2453 '53)

POKHODUN, Timofey Dmitriyevich; KARELIN, V.F., retsenzent;
POKHVALOV, Ye. P., retsenzent; RYBALKO, B.V., nauchn.
red.; VLASOVA, Z.V., red.

[Standardization in shipbuilding] Standartizatsia v
sudostroenii. Leningrad, Sudostroenie, 1965. 179 p.
(MIRA 18:7)

POKHVALOV, Yu.Ye., inzh.; KRONIN, I.V., inzh.; KURGANOVA, I.V., inzh.

Heat transfer during the boiling of underheated water in
pipes. Teploenergetika 10 no.11:74-80 N '63.
(MIRA 17:1)

1. Moskovskiy inzhenerno-fizicheskiy institut.

L 25435-66 EPF(n)-2/EWT(l)/EWT(m)/ETC(f)/EWG(m) WW/GS

ACC NR: AT6005821

SOURCE CODE: UR/0000/65/000/000/0137/0142

AUTHORS: Pokhvalov, Yu. Ye.; Kronin, I. V.; Kurganova, I. V.

54

B+1

ORG: none

TITLE: Results of investigation of the average heat transfer in forced convection in a tube and at high thermal loads

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Nekotoryye voprosy fiziki i tekhniki yadernykh reaktorov (Some problems in the physics and engineering of nuclear reactors), Moscow, Atomizdat, 1965, 137-142

TOPIC TAGS: heat transfer, boiling, convective heat transfer, water, ethyl alcohol

ABSTRACT: The apparatus described in detail in a companion paper (MIFI, Nekotoryye voprosy fiziki i tekhniki yadernykh reaktorov, Atomizdat, 1965, 112 -- 126; Acc. AT605819) was used in the investigations. The measurements were made with distilled water (hardness 0.5 -- 1 $\mu\text{g-eq/l}$; alkalinity -- 20 $\mu\text{g-eq/l}$; dry residue -- 0.1 mg/l) and rectified ethyl alcohol (95% by volume). The cleanliness of the

Card 1/2

L 25435-66

ACC NR: AT6005821

surface and the parameters of the water and the density of the alcohol were periodically monitored. The tests were made within the following limits: heat load $0.232 \text{ -- } 24.4 \text{ MW/m}^2$, pressure $1.5 \text{ -- } 90 \text{ bar}$, liquid velocity $1 \text{ -- } 23 \text{ m/sec}$, water temperature $18 \text{ -- } 273\text{C}$, ethyl alcohol temperature $18 \text{ -- } 192\text{C}$, Reynolds number $10^4 \text{ -- } 0.827 \times 10^6$, Prandtl number $18 \text{ -- } 0.87$. The results are tabulated and are found to be in fair agreement with the empirical formulas of V. V. Yakovlev (Atomnaya energiya, v. 8, 3, 250, 1960 and v. 2, 2, 179, 1957), but deviate greatly from the formulas of M. A. Mikheyev (Teploperedacha i teplovoye modelirovaniye [Heat Transfer and Thermal Simulation], Moscow, AN SSSR, 1959, p. 122). Orig. art. has: 1 figure, 2 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 05Jun65/ ORIG REF: 004/

Card

2/2 CC

L 25436-66 EPF(n)-2/EWT(1)/EWT(m)/ETC(f)/EWG(m) WW/GS
ACC NR: AT6005819 SOURCE CODE: UR/0000/65/000/000/0112/0126

AUTHORS: Pokhvalov, Yu. Ye.; Kronin, I. V.; Kurganova, I. V. 57
B+1

ORG: none

TITLE: Investigation of heat transfer from boiling underheated water in a tube

SOURCE: Moscow, Inzhenerno-fizicheskiy institut. Nekotoryye voprosy fiziki i tekhniki yadernykh reaktorov (Some problems in the physics and engineering of nuclear reactors), Moscow, Atomizdat, 1965, 112-126

TOPIC TAGS: boiling, heat transfer, nuclear reactor technology, nuclear reactor coolant

ABSTRACT: In view of the lack of reliable data on the prospects of forced cooling of reactors with underheated liquids boiling in tubes, the authors have set up experiments over a wide range of operating conditions, with provisions for continuing monitoring the cleanliness of the heat-transfer surface. To this end they designed, constructed, and tested an experimental setup consisting of a closed circulating

Card 1/2

L 25436-66

ACC NR: AT6005819

loop of stainless steel, with a set of control instruments, automatic regulation devices and protective equipment. The main units are a specially developed stainless steel pump and a working channel with various pickups and filters. The equipment, its operation, and heat transfer results at various pressures are presented. The experiments were made over a wide range of heat flux, velocities, and underheatings, and yielded various relations between the heat flux and the superheating of the tube walls. Empirical relations for the results under fully developed and undeveloped boiling conditions are presented to approximate the experimental data. The results are compared with the data obtained by others. Orig. art. has: 7 figures and 2 formulas.

SUB CODE: 18 / SUBM DATE: 05Jun65 / ORIG REF: 014 / OTH REF: 004

Card

2/2 CC

L 25434-66 EPF(n)-2/EWP(j)/EWT(1)/EWT(m)/ETC(f)/EWG(m) IJP(c) RM/WW/GS
ACC NR: AT6005820 SOURCE CODE: UR/0000/65/000/000/0127/0136

AUTHORS: Pokhvalov, Yu. Ye.; Kronin, I. V.; Kurganova, I. V. 63

ORG: none B+1

TITLE: Investigation of ²heat transfer during boiling of underheated ethyl alcohol in a tube

SOURCE: Moscow, Inzhenerno-fizicheskiy institut. Nekotoryye voprosy fiziki i tekhniki yadernykh reaktorov (Some problems in the physics and engineering of nuclear reactors). Moscow, Atomizdat, 1965, 127-136 19

TOPIC TAGS: ethyl alcohol, boiling, heat transfer, heat exchange, pressure effect

ABSTRACT: An experimental test loop described in a companion paper in the same source (MIFI, Nekotoryye voprosy fiziki i tekhniki yadernykh reaktorov, Atomizdat, 1965, 112 -- 165; Acc. AT605819) was used for the investigations. A complication was introduced by a deposit formed on the tube walls as a result of decomposition of the

Card 1/2

L 25434-66

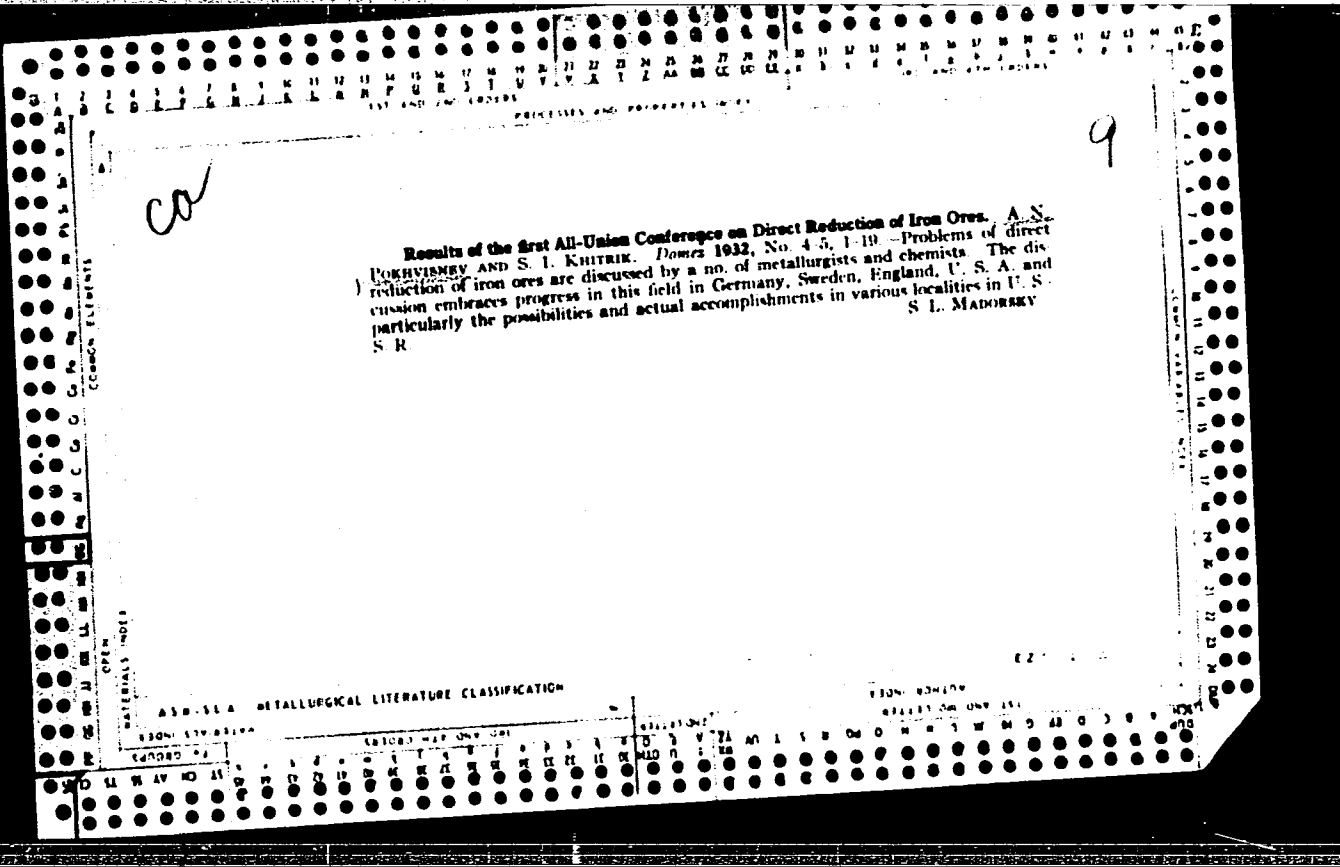
ACC NR: AT6005820

alcohol, which necessitated periodic cleaning of the working tube and checking the reproducibility of the results. The test schedule and results of measurements of the heat transfer from ethyl alcohol at pressures ranging from 1.5 to 60 bars at heat loading ranging from 0.232 to 5.8 MW/m², velocities 1 -- 23 m/sec, and liquid temperature from 20 to 235C are presented in the form of graphs. Two general empirical formulas to fit the experimental results are also given. The test results agree with the two formulas within 20%. Orig. art. has: 7 figures and 5 formulas.

SUB CODE: 20/ SUBM DATE: 05Jun65/ ORIG REF: 012/ OTH REF: 002

Card

2/2 CC



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

LIST AND TWO CODES

PROCESSES AND PROPERTIES INDEX

CA 9

COMMON ELEMENTS

INTERNALLY INDEXED

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED SERIALIZED INDEXED FILED

APR 1964

U.S. DEPARTMENT OF COMMERCE

U.S. GOVERNMENT PRINTING OFFICE

16-58319-1

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

U.S. GOVERNMENT PRINTING OFFICE: 1964 O - 58319

Kuruk Magnetic Anomaly (KMA). A. N. Pokhvisnev. *Dokl. Akad. Nauk SSSR*, No. 9, 2-4.—The KMA deposits are rard. at about 200 billion tons of magnetite iron ore carrying an av. of 30-40% Fe. As a potential source it is of extreme importance, being almost equal to the known world deposits (243 billion tons). Most of the ore is too poor to be used without preliminary magnetic sepa., although in some cases the ore carried 50-60% Fe which is high enough to be used directly. A map showing location of deposits is given. S. L. Madorsky

CA

PROCESSES AND PROPERTIES INDEX

9

Reducibility of Krivorog ores. A. N. Pokhysniy and M. S. Goncharevskii. *Dokl. Akad. Nauk SSSR*, No. 11-12, 457-49. Samples of Krivorog ore and agglomerate were tested for reducibility. Compn. of the ore was: Fe 61.40-69.49, FeO 0.61-14.06 and SiO₂ about 1%; and of the agglomerate: Fe 64.35-69.20, FeO 0.64-24.65 and SiO₂ 3.10-11.05%. Reduction was carried out with H at 800°. Particle size was varied from 5 to 50 mm., at 5-mm. intervals, and percentage of reducibility was plotted against time. Decrease of rate of reduction with increase in particle size is less pronounced in the agglomerate than in the ore. Agglomerate contg. 24.65% FeO was more easily reduced than ore contg. only 14.06%. The reduced ore is weak mechanically, but the reduced agglomerate is firm.
S. L. Madorosky

ASME-SLA METALLURGICAL LITERATURE CLASSIFICATION

POKHVISNEV, A.N.; SAYED MUKHAMED ABDEL' RASSUL'

Kinetics of the reduction of iron oxides. Izv. vys. ucheb. zav.;
chern. met. 6 no.3:34-39 '63. (MIRA 16:5)

1. Moskovskiy institut stali i splavov.
(Iron—Metallurgy)

POKHVISNEV, A.N.; YUSFIN, Yu.S.

Investigating the process of magnetizing roasting of Kerch Peninsula brown ore. Report no. 1. Izv. ~~vyb.~~ ~~ucheb.~~ zav.; chern. met. 5 no.9: 49-53 ' 62. (MIRA 15:10)

1. Moskovskiy institut stali i splavov.
(Kerch Peninsula—Iron ores) (Ore dressing)

POKHTISNEV, A.N.

POKHTISNEV, A.N. and GONCHARENKII, M.S. Vostanovimost' zheleznykh rud Krivogo Rogu, v svyazi s ikh fizicheskimi i mineralogicheskimi kharakteristikami. [2. izd.]. Kher'kov, Gos. nauchn.-tekh. izd-vo Ukrainy, 1936. 156 p. (Dnepropetrovskii institut metallov).

DIC: TN405.R92K73
1936

SO: LC, Soviet Geography, Part I, 1951, Uncl.

PAVLOV, Mikhail Aleksandrovich, akademik; POKHVISNEV, A.N., redaktor;
VAYNSHTEYN, Ye.B., tekhnicheskii redaktor

[Metallurgy of cast iron] Metallurgiya chuguna. 4-e izd. Moskva,
Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metal-
lurgii. Pt.1 [Introduction. Raw materials] Vvedenie. Syrye mate-
rialy. 1955. 212 p. (MLRA 8:7)
(Cast iron)

SOV/137-57-11-21042

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 11, p 60 (USSR)

AUTHORS: Solomakhin, I.S., Pokhvisnev, A.N.

TITLE: Some Problems of Iron ore Reduction Kinetics (Nekotoryye voprosy kinetiki vosstanovleniya zheleznykh rud)

PERIODICAL: V sb.: Proiz-vo stali. Moscow, Metallurgizdat, 1956, pp 376-388

ABSTRACT: The results of determination of the reducibility of certain types of ores are presented. Anamorphic conversion of the reduction curves by means of a parabolic equation permits identification of the kinetic, transitional, and diffusive reduction intervals. It is recommended that reducibility be described by the value of the angular coefficient of the anamorphic straight line. It is shown that the transition from reduction in one region to another involves changes in the apparent energy of activation.

Card 1/1

A.P.

POKHVISNEV, A.N., professor, doktor tekhnicheskikh nauk.

The Moscow Institute of Steel. Metallurg no.4:8-9 Ap '56.
(MLRA 9:9)

1. Zaveduyushchiy kafedroy metallurgii chuguna Moskovskogo
instituta.
(Steel--Metallurgy)

POKHLESNEV H. V.

PHASE I BOOK REPRODUCTION

See table of contents

Working of Steel and Alloys (Obrabotka stali i sployny)

PUB. DATA:

Gosudarstvennoye nauchno-tekhnicheskoye izdatel'stvo
literaturny po chernoy i tsvetnoy metallurgii, Moscow
1957, 451 pp., 3,000 copies

PLA. ANNOT.:

Monkovskiy ordena trudovogo krasnogo znameni instytut
stali imeni I. V. Stalina

EDITORS:

Responsible Ed.: Kidin, I. N., Ed. of Publications
House: Doludina, Ye. V., Tech. Ed.: Altoperov, A. A.
Editorial Council of the Moscow Steel Institute
(Institute stali): Glinkov, M. A., Professor, doctor;
Grigorash, R. N., docent, candidate of tech. sciences;
Gudtsov, N. T., Academician (deceased); Yelyutin, V. P.,
professor, doctor; Zhukhovitskiy, A. A., professor,
doctor; Kidin, I. N., professor, doctor; Lyubimov, A. P.,
professor, doctor; Lyubimov, A. P., professor, doctor;
Pavlov, I. M., corresponding member of the Academy of

Card 1/15

	<p>Author: U.S.S.R. Technologist, A. I., professor, doctor, Trubin, K. G., professor, doctor.</p>
<p>Abstract</p>	<p>This book is intended for scientists engaged in metallurgical research for plant engineers in ferrous rolling mills and forge shops. It may be profitably read by technical personnel, workers and students in this branch of industry.</p>
	<p>ments and theoretical investigations dealing with the structural changes and properties of various alloys. This series of articles by different researchers describes the deformations of metal under pressure, particularly deformations as they occur during rolling operations. The relationship of deformation and the shape and size of rolls is discussed in detail.</p>

Card 3/15

Practical experiments carried out by the author with various steel alloys are said to have fully substantiated the Soviet theory of kinetics in this kind of heating. There are 2/ Soviet references.

Kidin, I. N. Formation of Austenite during Intermittent Heating of Steel Alloys 48

The author arrives at the following conclusions: 1. The hardening temperature of chrome steel should be higher than that of tungsten and molybdenum steels, and 2. the different nature of the kinetics of heating of chrome and nickel steels indicate that with the increase of Cr content the size of the austenite grains decrease and will increase in size with the amount of Ni. There are 3 Soviet references.

Kidin, I. N. High-frequency Hardening of Molybdenum Steel 63

Working of Steel Alloys

It is noted that the kinetics of induction heating of molybdenum steel do not basically differ from those of high carbon steel. There is one Soviet reference.

Ilyshits, B. G., Ibragimov, Sh. Sh. Study of Structural Changes and the Properties of Nichrome Alloys 75

Among alloys with special physical properties of great importance are alloys with high electrical resistivity. The author conducted experiments with two special alloys numbered 1 and 2. From the change of resistivity in these alloys, he calculated the energy of the activation process. For alloy 1 it appeared to be 43300 cal/gram-atom but only when the solid solution contains 0.1% Ni. For alloy 2 the value was 66800 cal/gram-atom. There are 19 references, 12 Soviet, 4 German, 2 French, 1 Hungarian.

Gorelik, S. S., Gracheva, Yu. V., Korneyev, N. I., Skugarev, I. G., Spektor, E. N. Relaxation and Recrystallization of Single-phase Aging Ni-base Alloys 103

Card 5/15

Working of Steel Alloys

This is an investigation of relaxation and recrystallization of ten nickel alloys containing Cr, Al, Ti, Mo, V, B. There are 9 references, of which 6 are Soviet, 2 German, 1 USA.

Vishnyakov, D. Ya., Olkhovoy, L. S. The Effect of Niobium and Zirconium on Embrittlement of Chrome Steel in Tempering 11

The effect of niobium on the development of the temper brittleness of steel is said to be controversial. The purpose of this experiment was to determine the effect of Mo, V, Nb, and Zr on the temper brittleness of chrome steel in tempering. There are 11 references of which 6 are Soviet, 3 USA, 1 German, and 1 French.

179

Tempering of Steel Alloys

The changes of ferrite do not depend on temperature alone, time, the size of gamma grains and the carbon content are also of importance. It has been experimentally determined that in the temperature range 675-745°C, tungsten lowers the formation speed of crystal nuclei; below 650°C, it is lowered considerably. Above 745°C, tungsten has no appreciable lowering effect. Related phenomena are also discussed.

Ma, Ju-chang. The Effect of Vanadium on Temper Brittleness of Steel 165

The author states that so far, little is known about the effect of vanadium on the temper brittleness of steel. A number of experiments have been conducted which indicate that steel for machine building should contain 0.1%-0.3% vanadium. There are 9 references of which 4 are Soviet, 2 English, 2 German, 1 French.

Piguzov, ru. V., Pinkel'shteyn, B. I. The Effect of Chromium of the Modulus of Elasticity in Chrome-Iron Systems. 168

Card 7/15

The authors investigate the effect of chrome on the Young's modulus, the shear modulus, and the Poisson ratio in chrome-iron systems. Experimental data are given. There are 9 references of which 5 are Soviet, 3 English, and 1 German.

Finkel'shteyn, B. N., Usova, L. F. Investigation of the Aging Effect of Industrial Iron by the Inner Friction Method. 176

The author is concerned with the effect of aging on the physical properties of low carbon steel. The aging process was measured by the inner friction method which in turn is based on dampening of torsional vibrations of small amplitude. It was experimentally determined that, among other phenomena, the speed of aging increases with the amount of C, N, Mn, Ph, S, and Si. There are 8 references of which 6 are English and 2 are German.

Lyubimov, A. P., Lyubitov, Yu. N. Measurement of Liquid Indium Vapor Pressure by Means of a Mass Spectrograph. 191

A study of thermodynamic characteristics of metals by measuring the vapor pressures of those metals. The vapor pressure of liquid indium was measured by means of a mass spectrograph at temperatures ranging from 646° to 1065°K. There are 8 references, of which 6 are English, 2 German.

Poludkin, P. I., Zhadan, V. T. Investigation of Metal Deformation in Rolling Flanged Shapes

106

in rolling flanged beams and other semi-circular shapes of rollers and the size of rolled stock is discussed. There are 50 references of which 41 are Soviet, 8 German, and 1 English.

Polukhin, P. I., Zhadan, V. T. Investigation of the Distribution of Metal Deformation After a Breakdown Pass 228

The Authors investigate the cross sectional deformation of metal after a breakdown pass taking into account the angle of the groove

and 9/15

...also measurably by their method the speed of the
during the rolls. There are 2 Soviet references.

Review: I. M. Akhymova, V. A. A study of the relationship
between various deformations in rolling.

To increase production of rolled stock it would be advantageous
to reduce the number of passes while increasing the pressure.
The authors study the various deformations of stock in rolling
and the relationship between these deformations. There are 6
Soviet references.

Review: I. M. Akhymova, V. A. Investigation of the relationship
bite and the steady-state rolling process.

To gain better understanding of the forces involved in rolling
a study has been made of the angle of bite, the contact arc and
the contact angle with relation to the temperature of the rolled
material. There are 10 Soviet references.

Card 11/15

Rolling of Steel Alloys

Rolling and Its Components.

These experiments deal with various problems of rolling. The amount and the direction of deformation and the effect of roller diameters have been experimentally determined. There are 6 Soviet references, 1 French.

Polukhin, P. I., Yegorov, B. V. Investigation of the Relationship Between Transverse and Longitudinal Deformation in Rolling with Nonuniform Reduction 300

A monograph has been developed to facilitate the calculation of the mean elongation coefficient permitting ready solution of practical problems of roller design. There are 11 Soviet references.

Polukhin, P. I., Astakhov, I. G. Rolling of Steel



"APPROVED FOR RELEASE: 06/15/2000

CIA-RDP86-00513R001341620009-5

APPROVED FOR RELEASE: 06/15/2000

CIA-RDP86-00513R001341620009-5"

Machines.
The author states that the basic prerequisite for the invention of the production process is the continuity of flow of all the involved processes. In this paper the author makes a study of the theoretical and practical efficiency of automatic production processes. Unless a constant flow is maintained and bottlenecks eliminated, automation may be uneconomical. An automatic forge hammer is the specific example investigated. There are 3 Soviet references.

Shain, Ya. S. The Effect of Shearing Forces on Beam 441
Information
Card 14/15

The author investigates the effect of shearing stresses on wooden beams and steel beams of various cross sections. The author attempts to give accurate values for the coefficient K, which should facilitate the calculation of various structural profiles. There are 2 Soviet references.

AVAILABLE: Library of Congress

Card 15/15

60/74
June 6, 1958

POKREVIŠEV, A. V.

APPROVED

907/1728

18(0)
 Akademiya nauk SSSR. Institut metallurgii
 Sverdlovskiy Problemy (Modern Problems in Metallurgy)
 Moscow, Izdatel'stvo AN SSSR, 1958. 630 p. 3,000 copies printed.
 Reep, Ed. A. V. Samarin, Corresponding Member, USSR Academy of
 Sciences; Ed. of Publishing House: V. S. Zubovskiy, and
 A. E. Borovoy. Tech. No. 1. T. V. Polyakova.

FOREWORD: This book is intended for scientific and technical personnel in the field of metallurgy.

CONTENTS: This is a collection of articles on certain aspects of Soviet metallurgy. The book is dedicated to Academician Ivan Pavlovich Mirzakhon on the occasion of his 75th birthday. The book is divided into seven parts. The first part consists of two general articles, the second part consists of two articles by John Chipman, Nicholas Grant, and John Elliott (M.I.T., USA) describing the meeting with Marzin in Moscow and also his visits to the United States. The second part consists of three articles and deals with raw materials and fuels for the Soviet metallurgical industry. The third part represents the major portion of the book. It consists of 25 articles dealing with the various aspects of the metallurgy of pig iron and steel. The fourth part consists of two articles treating the metallurgy of nonferrous metals. The fifth part consists of three articles on the ferrous side of the field. The sixth part consists of eight articles describing certain aspects of physical metallurgy. The last part deals with general problems in the field of metallurgy. References are given after each article. No permissions are mentioned.

TABLE OF CONTENTS

Modern Problems in Metallurgy	907/1728
— Mirzakhon, I. V. [Doctor of Technical Sciences, Leningrad Polytechnical Institute] Application of Combustion Blast in Blast-Furnace Smelting	61
— Mirzakhon, I. V. [Candidate of Technical Sciences, Central Scientific Research Institute of Ferrous Metallurgy], B. A. Gess [Candidate of Technical Sciences, Metallurgical Institute, AN USSR] Future Prospects for Pig Iron Production with the Application of Oxygen Blast (90-95% O ₂)	96
— Pechenkin, A. E. [Doctor of Technical Sciences, Moscow Steel Institute] Metallurgical Evaluation of Raw Materials for Blast-Furnace Smelting	104
— Pechenkin, A. E. [Director of the Chemical and Metallurgical Institute of the Chinese People's Republic, Peking] New Concept of the Blast Furnace Process	115
Card 1/13	7

341620009-5

SOV/163-58-1-10/53

AUTHORS: Pokhvisnev, A. N., Savel'yev, B. A.

TITLE: The Mechanism of the Solidification of Molds in Burning
(O mekhanizme uprochneniya okatyshey pri obzhige)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958,
Nr 1, pp 43-47 (USSR)

ABSTRACT: To explain some rules governing the mechanism of the solidification of molds in burning the authors carried out some investigations. It was found that the strength of the molds depends on the burning temperature. The decomposition temperature under pressure, as well as the micro and macro structures were necessary for the determination of the molds. The following processes occur in the solidification of the molds of magnetite ores and concentrates:
a) An oxidation of magnetite to hematite whereby a recrystallization of the hematite grains occurs. The formation of solid molds is most influenced by the recrystallization of the magnetite grains. It is useful to burn the molds prior to use at oxidation temperatures of 1200 - 1300°C for 30 minutes.

Card 1/2

SOV/163-58-1-10/53

The Mechanism of the Solidification of Molds in Burning

The solidification of the molds of hematite ores and concentrates is promoted by the formation of slags. In the solidification of magnetite and hematite molds certain additions exert a positive influence, as they reduce the burning time of the molds from 30 to 10 minutes. Mainly CaO up to 3% is used as the impurity which positively influences the solidification process.

The higher the iron content in the ore and in the concentrates the higher is the strength of the molds produced from these components. There are 4 figures.

ASSOCIATION: Moskovskiy institut stali (Moscow Steel Institute)

SUBMITTED: October 1, 1957

Card 2/2

Pokhvisnev, A. N.

133-2-2/19

AUTHORS: Pokhvisnev, A.N. (Dr. Tech. Sc., ^{Prof.}) and Savel'yev, B.A. (Engineer)

TITLE: Mechanism of the Hardening of Pellets in Roasting
on Firing (O mekhanizme uprochneniya okatyshey pri oozhige)

PERIODICAL: Stal', 1958, Nr 2, pp.105-109 (USSR)

ABSTRACT: The mechanism of the strengthening of iron ore pellets on ignition was investigated in order to establish the best operating conditions for the process. The following materials were used: Krivoy Rog magnetite concentrates, Krivoy Rog hematite ore and pure ferric oxide. The chemical composition and size distribution of raw materials is given. Pellets were made by a method developed in the Moscow Institute of Steel (no details given). Firing of pellets under various conditions was carried out in a tube furnace. Crushing strength of pellets was measured with an **PMI-50** (above 100 kg) and an apparatus based on the Emmerich system (below 100 kg). Macro and micro structure of pellets was also studied. Experimental results are shown in the form of graphs in Figs.1-11. It was established that an increase in the strength of magnetite pellets fired up to 900°C was due to oxidation of magnetite to hematite. Further increase of strength on firing to higher temperatures (up to 1300°C) was due to recrystallisation of hematite. It was

Card 1/2

133-2-2/19

C. Mechanism of the Hardening of Pellets in Roasting

also found that the nature of the surface of grains (crushed or uncrushed) has an influence on the final strength of pellets fired under the same conditions (crushed grains produce a higher strength). The influence of lime addition is positive up to 3% due to lowering of the softening temperature of gangue material and negative at higher concentrations, due to separation of iron oxide grains. It is concluded that magnetite pellets should be fired under strongly oxidising conditions at high temperatures in order to oxidise magnetite to hematite quickly and as fully as possible, then the firing temperature should be raised to the established limit and maintained until recrystallisation of the hematite formed is completed. The duration of the process is from 10-30 min, the temperature 1200-1300°C, depending on the nature of the gangue material. For hematite pellets the duration and temperature of the firing can be somewhat lowered if ore is crushed before beneficiation, otherwise a temperature above 1300°C is necessary. There are 11 figures and 2 English references.

ASSOCIATION: Moscow Steel Institute (Moskovskiy Institut Stali)

AVAILABLE: Library of Congress.
Card 2/2

CHILINGAROV, G.A., inzh.; POKHVISNEV, A.N., prof., doktor.

Effect of the physical structure of sinters on their metallurgical properties. Sbor. inst. stali no.38:5-44 '58. (MIRA 11:8)

1. Kafedra metallurgii chuguna Moskovskogo instituta stali im.Stalina.
(Sintering)

POKHVISNEV, A.N., doktor tekhn.nauk prof.; MOINOV, S.G., inzh.;
VEGMAN, Ye.F., kand.tekhn.nauk

Mineralogical composition and the reducibility of Chiatura
manganese ore sinters. Izv.vys.ucheb.zav.; chern.met. 2
no.7:19-22 J1 '59. (MIRA 13:2)

1. Moskovskiy institut stali.
(Chiatura--Manganese ores) (Sintering)

18.3200

77133
SOV/148-59-9-3/22

AUTHORS: Pokhvisnev, A. N. (Doctor of Technical Sciences, Professor), Zhilkin, N. K. (Engineer)

TITLE: The Use of Blast Furnace Gas Composition for the Analysis and Thermal Control of Blast Furnace

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1959, Nr 9, pp 29-45 (USSR)

ABSTRACT: This article describes a method of control of blast furnace work under stabilized or unstabilized conditions, working on wet blast, on oxygen-enriched blast, or with application of natural gas. The method was developed by A. N. Polhvisnev (Author's Certificate Nr 75401) and checked under industrial conditions at the Plant imeni Dzerzhinskiy (zavod imeni Dzerzhinskogo) and at the Magnitogorsk Plant (Magnitogorskiy zavod) in 1941-1942. A. N. Pokhvisnev showed that, using the analysis of blast furnace gas, it is possible to calculate the value of p (index of carbon economy),

Card 1/8

The Use of Blast Furnace Gas Composition
for the Analysis and Thermal Control of
Blast Furnace

77133

SOV/148-59-9-3/22

which is a volumetric or weight ratio of oxygen of the charge (which passed over into gas) to the gasified carbon. Therefore $p = \frac{O \text{ (charge)}}{C \text{ (gasified)}}$, and can be calculated using the data of material balance of melt. At the same time the carbon economy index can be determined by the composition of the blast furnace gas and blast: $p = \frac{CO_2 + 0.5 CO - \beta N_2}{CO_2 + CO}$ where CO_2 , CO , and N_2

are the components of the blast furnace gas in % by volume, and β is the ratio of oxygen (including the oxygen of blast moisture) to the nitrogen in the blast. A. N. Pokhvisnev also suggested that the reducing work of gases can be evaluated by the value $q = \frac{0.5 CO_2}{CO_2 + CO}$,

which represents the ratio of oxygen of indirect reduction to the gasified carbon of the coke. His previously published method of preparing the heat balance rate on

Card 2/8

The Use of Blast Furnace Gas Composition
for the Analysis and Thermal Control of
Blast Furnace

77133

SOV/148-59-9-3/22

the basis of blast furnace gas analysis gives the means of calculating (for any period of time) the consumption of heat (M) per unit of oxygen taken away from the charge, or per unit of produced cast iron.

Expressing M through the indexes p and q, $M =$

$$= \frac{1,254 + 2.38 W_{\text{O}_2} + 4.76 W_{\text{CO}} + 6.040 q - 4.76 W_{\text{CO}}}{p}$$

$\frac{\text{cal}}{\text{m}^3 \text{O}_2}$ of charge, where W_{O_2} = heat content of 1 m^3

of blast. The indexes of blast furnace work, determined by the blast furnace gas content; the heat balance rate; a program of analysis; and blast furnace thermal control and the investigation of the furnace work are discussed. The authors derived 13 formulas which were tested on blast furnace Nr 2 of the "Azovstal'" Plant (zavod "Azovstal'") over a period of 95 days in February, June, July, August, and September, 1958 and in March, 1959. Altogether, 665 comparisons of calculated and experimental indexes were prepared.

Card 3/8

The Use of Blast Furnace Gas Composition
for the Analysis and Thermal Control of
Blast Furnace

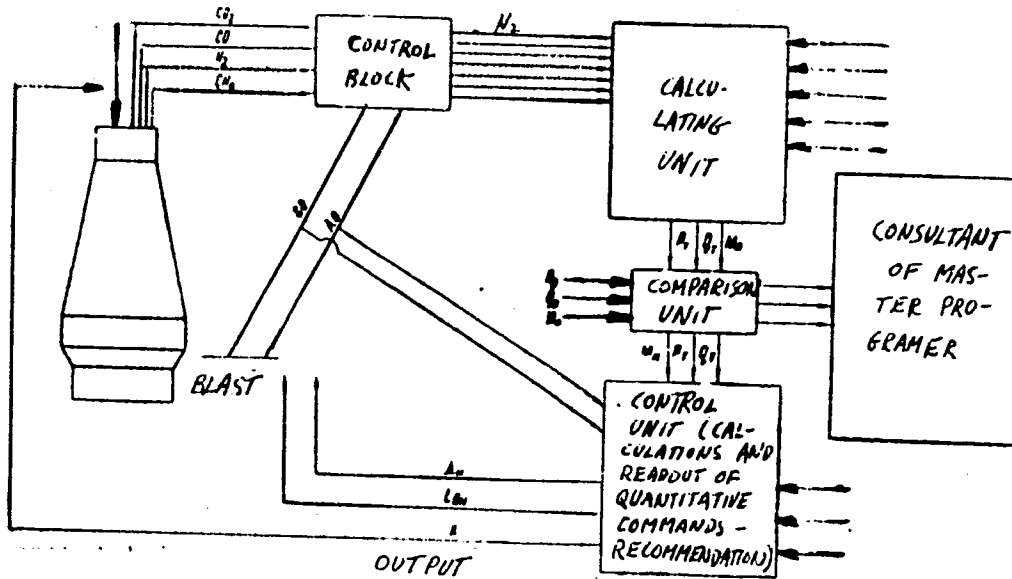
77133
SOV/148-59-9-3/22

For illustration of the proposed method, the authors kept a daily diagram of the furnace work (see Fig. 4) and also prepared a schematic diagram of blast furnace thermal control (see Fig. 1). The results of the above investigation were listed as follows: (1) A new method of making hydrogen balance by the analysis of blast furnace gas. It determines the amount of hydrogen which evolved in the reduction processes and also the amount of oxygen taken from the charge by hydrogen and withdrawn from the furnace as water vapor, which is especially important when blowing natural gas. (2) The indexes, previously advanced by Pokhvisnev for the analysis of operation of blast furnace process under industrial conditions, were supplemented, in order to provide for the work of blast furnaces using the wet high-temperature blast and oxygen-enriched blast. The indexes took into account the possibilities of blowing the natural gas and also the reduction work of hydrogen. (3) A derived general formula of heat balance rate gives the means of calculating (at any given moment, using the

Card 4/8

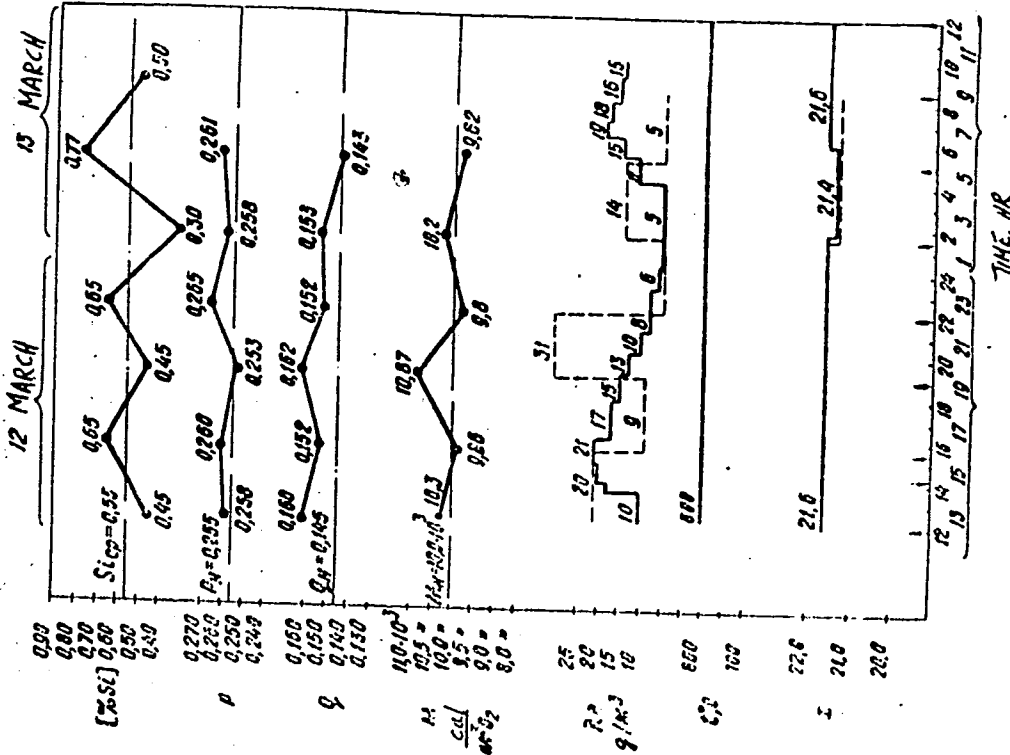
The Use of Blast Furnace Gas Composition for the Analysis and Thermal Control of Blast Furnace

77133
SOV/148-59-9-3/22



Card 5/8

Fig. 1. A schematic diagram of blast furnace thermal control.



77133
80V/142-59-
9-3/22

Fig. 4.
A diagram
for March
12 and 13.

Card 6/8

The Use of Blast Furnace Gas Composition
for the Analysis and Thermal Control of
Blast Furnaces

77133
SOV/148-59-9-3/22

values of indexes p and q , and heat content of the blast W_{O}) the incoming heat per unit of oxygen taken away from the charge (or, correspondingly, per unit of produced cast iron). (4) On the basis of the heat balance rate formula, the authors derived new formulas for quantitative evaluation of the means of thermal control. (5) A newly developed method of analysis and thermal control of blast furnaces gives the means for evaluation of the rate of blast furnace process during the stabilized as well as unstabilized operation, and enables the taking of the necessary steps in the event the work of the furnace deviates from normal. (6) Industrial tests of optico-acoustical automatic gas analyzers showed that, with proper tuning and systematic observation, they can be used for continuous control of blast furnace gas composition. For more reliable data, however, some further work is needed to increase their accuracy. The main drawback of optico-acoustical gas analyzers is the insufficient durability of the lithium-fluorine glass glued into the optical

Card 7/8

The Use of Blast Furnace Gas Composition
for the Analysis and Thermal Control of
Blast Furnaces

77133
SOV/148-59-9-3/22

cameras. This defect is especially noted by Pliskanov-
skiy, S. T., and Temnokhud, N. N., Metallurg, Nr 10,
1958. (7) To insure the analysis and the automatic
control of blast furnace thermal conditions by the
developed method, the reliable automatic gas analyzers
should be supplemented by the computing devices. (8)
Industrial tests of the new method showed that, with
satisfactory performance of gas analyzers, satisfactory
forecasts regarding furnace thermal conditions reached
93-95%, a much higher percentage than any previously
reached by production men on the basis of other data
and practical experience. (9) A high percentage of
satisfactory forecasts induced the decision to install
this method in one or two plants with subsequent extension
to other plants, putting control of blast furnaces on a
scientific basis. There are 4 figures; 1 table; and 4
Soviet references.

ASSOCIATION:
SUBMITTED:

Moscow Steel Institute (Moskovskiy institut stali)
June 27, 1959
Card 8/8

PHASE I BOOK EXPLOITATION

SOV/4252

Akademiya nauk SSSR. Sovet po izucheniyu proizvoditel'nykh sil

Chernaya metallurgiya (Ferrous Metallurgy) Moscow, Izd-vo AN SSSR, 1960.
275 p. (Series: Razvitiye proizvoditel'nykh sil Vostochnoy Sibiri)
Errata slip inserted. 2,000 copies printed.

Ed.: G.I. Lyudogovskiy, Candidate of Technical Sciences; Ed. of Publishing House: G.M. Makovskiy; Tech. Ed.: Ye.V. Makuni; Editorial Board of this vol.: S.S. Dvorin, N.V. Ovchininskiy, Candidate of Technical Sciences, A.N. Pokhvisnev, Doctor of Technical Sciences, and A.A. Fedotov, Engineer; Editorial Board of Series: I.P. Bardin, (Deceased), Academician, Academy of Sciences USSR (Chief. Ed.); M.A. Lavrent'yev, Academician, Academy of Sciences USSR; S.I. Vol'fkovich, Academician, Academy of Sciences USSR; V.I. Dikushin, Academician, Academy of Sciences USSR; V.S. Nemchinov, Academician, Academy of Sciences USSR; V.I. Veyts, Corresponding Member, Academy of Sciences USSR; O.D. Levitskiy, Corresponding Member, Academy of Sciences USSR; N.N. Nekrasov, Corresponding Member, Academy of Sciences USSR; L.B. Pustovalov, Corresponding Member, Academy of Sciences USSR; T.S. Khachaturov, Corresponding Member,

Card 1/05

Ferrous Metallurgy

SOV/4252

the Section with their affiliations is given in the Appendix. References accompany several of the articles.

TABLE OF CONTENTS:

Foreword 3

Bardin, I.P. (Deceased). Development of Ferrous Metallurgy in Eastern Siberia 7

SECTION I. MINERAL RESOURCES FOR FERROUS METALLURGY

Chernyshev, G.B. Ore and Raw Material Base of Ferrous Metallurgy in Eastern Siberia 15

Feygin, L.M. Comparative Technical and Economic Characteristics of Industrial Development of Eastern Siberian Iron Ore Deposits 37

Card 3/0 *3*

Ferrous Metallurgy

SOV/4252

Sichenko, V.K. Prospects for the Development of Coke and Chemical Production From Coking Coals of Eastern Siberia	93
Panchenko, S.I. Raw Material Base for Coke Supply for Eastern Siberian Ferrous Metallurgy	104
Sapozhnikov, L.M. Continuous Coking and SemiCoking of Eastern Siberian Coals	110
<u>Pokhvisnev, A.N.</u> and B.M. Zlobinskiy. Coke From Eastern Siberian Brown Coals	114
Review of Adresses on Reports Dealing With the Development of the Coke and Coke Byproduct Coke Industry of Eastern Siberia	121

Card 5/5 5

TIKHOMIROV, Ye.N.; POKHVISNEV, A.N.

Process of iron reduction in the blast furnace with burden including Kamysh Burun sinter. Izv. vys. ucheb. zav.; chern. met. no. 1:31-40 '61. (MIR² 14:2)

1. Zavod "Azovstal'" i Moskovskiy institut stali.
(Iron--Metallurgy) (Kerch--Iron ores)

POKHVISNEV, A.N., doktor tekhn.nauk, prof.; BAZANOV, F.M., kand.tekhn.
nauk; VEGMAN, Ye.F., kand.tekhn.nauk; YUSFIN, Yu.S., inzh.

Magnetization roasting of brown Kerch ores with removal of arsenic.
Stal' 21 no. 4:289-293 Ap '61. (MIRA 14:4)

1. Moskovskiy institut stali.
(Kerch--Iron ores) (Ore dressing)

POKHVISNEV, A.N., doktor tekhn.nauk, prof.; TARASOV, V.P., inzh.;
TARASOV, F.P., inzh.; KOTEL'NIKOV, I.V., inzh.; LAVRENT'YEV, M.L.,
inzh.

New charging equipment for blast furnaces. Stal' 22 no.1:16-17
Ja '62. (MIRA 14:12)

1. Moskovskiy institut stali i Zhdanovskiy zavod imeni Il'icha.
(Blast furnaces--Equipment and supplies)

POKHVISNEV, A.N., doktor tekhn.nauk, prof.; SPEKTOR, A.N., inzh.;
YARKHO, Ye.N., inzh.

Calculating the charge for the production of partly reduced
'metallized) ore and coal nodules. Stal' 22 no.2:106-109 F '62.
(MIRA 15:2)

1. Moskovskiy institut stali i Gosudarstvennyy soyuznyy
institut po proyektirovaniyu metallurgicheskikh zavodov.
(Ore dressing)

POKHVISNEV, A.N., prof., doktor tekhn.nauk; TARASOV, V.P., inzh.; TARASOV,
F.P., inzh.

Distributing the charge materials around the furnace top by a
standard charge distributor. Stal' 24 no.2:100-104 F '64. (MIRA 17:9)

1. Moskovskiy institut stali i splavov, Zhdanovskiy metallurgicheskiy
institut i Zhdanovskiy metallurgicheskiy zavod im. Il'icha.

ZARAKHANI, A.I.; SPEKTOR, A.N.; SHCHEPILOV, P.I.; YUSFIN, Ya.S., GANNIN,
N.P.; POL'KIN, S.I.; FOKHVISHEV, A.N.

Technical and economic estimate of the concentratability
of lean iron ores. Report No.2. Izv. vys. ucheb. zav.
chern. met. 8 no.9:17-21 '65. (MIRA 18:9)

1. Moskovskiy institut stali i splavov.

ZARAKHANI, A.I.; SPEKTOR, A.N.; SHCHEPILOV, F.I.; YUSFIN, Yu.S.; BANNYY, N.P.;
POL'KIN, S.I.; POKHVISNEV, A.N.

Technical and economic evaluation of the concentrability of lean iron
ore. Izv. vys. ucheb. zav. chern. met. 8 no.7:23-27 '65. (MIRA 18:7)

1. Moskovskiy institut stali i splavov.