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S

18

The Influence of Nitrogen on the Properties of Rustless Steels. A. Samarin, A. Yashevich and I. Paisov. (Iron and Steel Institute, 1945, Translation Series, No. 215). An English translation is presented of a paper which appeared in the Bulletin de l'Académie des Sciences de l'U.R.S.S., 1943, No. 5-6, pp. 71-77. It contains an account of investigations of methods of alloying steel with nitrogen, and of the effect of nitrogen on the properties of stainless steels. Heat-treated cold-rolled steel containing 17-19% of chromium, 5% of nickel and 0·15-0·20% of nitrogen is equivalent to 18/8 stainless steel in its mechanical properties and corrosion resistance. The porosity of ingots increases with increase in the nitrogen/chromium ratio in the steel; if this ratio is greater than 0·01 there will be blowholes in the steel.

Dokl. AN SSSR

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Production of silicoaluminum from ash of the Moscow basin coals. A. Yaskevich and A. M. Samarin. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1945, 217-41.—The ash of the Moscow basin coals contains SiO_2 42.30, Al_2O_3 39.56, CaO 0.90, MgO 2.79, Fe_2O_3 5.75, and SO_3 5.21%. From it can be made an Al-Si alloy contg. more than 40% of Si and up to 30% of Al. Charcoal is the best reducing agent. Excess of the reducing agent yields an alloy higher in Al. The chem. compn. of the alloy and the yields of Al and Si depend of the compn. of ash. An alloy contg. 31% of Al was obtained from ash contg. 42% of Al_2O_3.

W. R. Henn

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CA

9

Influence of columbium and titanium on stainless-steel properties. A. Vaskevich and A. M. Samarin (Moscow Steel Inst. imeni Stalina). *Bull. acad. sci. U.R.S.S., Classe sci. tech* 1945, 505-602. Stainless steels were made contg. variable amts. of Ti and (or) Cb. The intercryst. corrosion measured by bending tests after boiling the alloys in Hatfield reagents was highest in Cb-contg. steels. To measure chem. resistivity, samples were boiled in hot HNO_3. Ti alloys had an increasing loss of wt. with increasing Ti content, whereas Cb in concn. of 0.53-1.68% did not lower the chem. resistance. S. Pakswer

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CA

9

Analysis of the process of absorption of gases by metals.

I. A. D'yakonov and A. Samarin. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* **1945**, 813-20(in Russian); cf. C.A. 40, 4932[2]. —Hydrogen absorption isobars of various metals fall into 2 distinct groups: one with weaker absorption rising with temp. at 400-1000° (Si, Cu, Ag, Cr, Fe, Co, Ni), the other with stronger absorption falling with rising temp. (Ti, Zr, Th, V, Cb, Ta, La, Ce, Pt, Pd). Isotherms in the first group, corresponding to simple solid soln., are straight lines in terms of the square root of the gas pressure, p. In the second group, the plot against $\sqrt{p}$ is linear only at low pressures; the isotherm then bends upward and attains a horizontal satn. level at high pressures. In systems of this type, there is a transition between regions of solid soln. and compd. formation depending on temp. and pressure. In the Ag-O system, the min. at 100° exhibited by the isobars corresponds to a transition from chem. interaction to solid soln. above the min., as is evidenced by the linearity with $\sqrt{p}$ above 600°. The generalized isotherm of absorption (cc. gas per g. metal) against $\sqrt{p}$ for each system consists of 3 continuous branches: (1) a first linear portion corresponding to soln. in the metal of atoms of the gas, followed by (2) a second linear portion of steeper rising slope corresponding to soln. in the metal of a gas-metal compd., and (3) a final horizontal 3 phase branch of complete satn. This general scheme permits the classification of metal-gas systems. The scheme is not obligatory for all systems; e.g., γ-Fe-N, which corresponds to branch (2) passing through the origin of the coördinate system with branch (1) wholly absent. Higher temp. favors region (1), as is seen in particular on Pd-H isotherms; with rising temp., the simple solid-soln. region extends increasingly into higher pressures, the isotherm itself being shifted downwards. Thus N. Thon

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1ST AND 2ND ORDERS

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S

18

Non-Rusting Steels. A. M. Samarin. (Iron and Steel, 1945, vol. 18, July, pp. 226–229). This is an English translation of a paper which appeared in the Bulletin de l'Académie des Sciences de l'U.R.S.S. The effect of nitrogen on the mechanical properties of heat-treated stainless steels containing 17–20% of chromium and 5–9% of nickel was investigated. The austenite contents of the steels were determined after quenching, after reheating for 2 hr. at 650° C., and after reheating and boiling in Hatfield's reagent for 72 hr. The yield point and the ultimate strength of steels were increased by the reheating and boiling treatment. The stability of the austenite increased the more austenite there was present. Increasing the nitrogen content raised the tensile strength of the steels. The resistance of the steels to intercrystalline corrosion could be determined from measurements of the electrical resistance.

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2

Distribution of sulfur between metal and slag from the viewpoint of the ionic nature of slag. A. M. Samarin, M. Temkin, and L. A. Shvartsman (Moscow Steel Inst.). *Acta Physicochim. U.R.S.S.* 20, 421-40(1945).—A careful analysis of the available data on the desulfurization process: FeS (in liquid Fe) + CaO (in slag) = FeO (in slag) + CaS (in slag) shows that no real equil. const. is obtained. The concept of perfect ionic solns. (cf. preceding abstr.) enables one, however, to treat the equil. between slag and metal on the basis of the ionic nature of slags. This leads to an equil. const. $K_S = a_{Fe^{++}} \cdot a_{S^{--}}/x'_S$ where $a_{Fe^{++}}$ and $a_{S^{--}}$ are the activities of Fe^{++} ions and S^{--} ions in the slag and x'_S is the wt. percentage of S in the metal. K_S is then const. for slags of widely varying compn., including slags consisting almost entirely of FeO, of almost pure CaO, these const. various amts. of SiO_2 as well as slags to which CaF_2 and $CaCl_2$ have been added. Fair agreement was found between data of plant investigations and those of lab. researches. Plant heats of the refining period gave lowered values for K_S, which may be due to the fact that no equil. was reached under prevailing conditions, corresponding to a very high value of the equil. coeff. of S distribution between slag and metal.

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2

Analysis of the absorption process of gases by metals II. Absorption of hydrogen and nitrogen by iron. A D'yakonov and A. Samarin. *Bull. acad. sci. U.R.S.S., Classe sci. tech.* 1946, 121-6; cf. *ibid.* 1945, No. 9.—The neg. heat effect of absorption and the close adherence of this phenomenon to "square-root rule" at all temps. and pressures indicate that in the system H-Fe there is a typical case of soln. of at. H in Fe. The relation between the soly. const. of H in Fe and the temp. is given for α-Fe by $\log K_H = -(1260/T) - 2.51$, γ-Fe $\log K_H = -(1220/T) - 2.335$, δ-Fe $\log K_H = -(1340/T) - 2.40$, and liquid Fe $\log K_H = -(1590/T) - 1.71$. Calcns. of ΔF°_{600} and of ΔH_T show that the allotropic form of Fe has a slight effect on the soly. of H in Fe. N is less metallic than H and therefore it has a greater chem. activity toward Fe. The latter forms 2 known nitrides, Fe_2N and Fe_4N. ΔF°_{600} of Fe_2N and Fe_4N is 890 and 2580, resp., thus the latter is the less stable of the two. The relation between the soly. of N in Fe and temp. is given for α-Fe by $\log K_N = -(3660/T) + 0.42$, γ-Fe $\log K_N = (371/T) - 1.907$, δ-Fe $\log K_N = -(2770/T) - 0.35$, and liquid Fe $\log K_N = (634/T) - 1.08$. Thermodynamic calcns. show that the absorption of N by α, δ, and liquid Fe results in a soln. of N in the Fe, whereas the absorption of N by γ-Fe results in the formation of the nitride Fe_2N. M. Hosch

~~Dokl. At~~ Iz-Ak-Nauk SSSR, ~~Vest. AN SSSR~~, Otdel. Tekh-Nauk.

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9

The effect of columbium and titanium on stainless steel. A. Yaskevich and A. Samarin. *Bull. acad. sci. U.S.S.R., Classe sci. tech.* 1946, 505-512. Cb substituted for Ti in Cr-Ni stainless steels does not affect the tensile strength, the reduction in area, or the impact strength; it decreases slightly the relative elongation. Cb does not decrease the amount or the stability of the austenite; it improves the resistance of the steel to intercrystal corrosion, but not to chem. corrosion, e.g., the action of boiling HNO_3. Cb stainless steel welded with electrodes of the same material is better than welded Ti stainless steel.

S. Strelzoff

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

Samarin, A.

I. V. Stalin Moscow Inst. Steel, 1946

"The Influence of Niobium and Titanium on Stainless Steel Properties.

Iz. AN. Nauk SSSR, Otdel Tekh. Nauk, No. 4, 1946.

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2

The ionic nature and solubility of oxides and sulfides in melts. A. M. Samarin and L. A. Shvartsman (Moscow Steel Inst.). J. Phys. Chem. (U.S.S.R.) 20, 180-93 (1946).—The solv. of oxides and sulfides in melts depends on the product L of the activities of their ions. The activity of a cation (or anion) is defined as its mole fraction in the melt. Literature data (cf., e.g., Fetters and Chipman, C.A. 35, 3372[7]) show that L is as const. as it is in aq. solns.

J. J. Bikerman

Zhur. Fiz. Khim.,

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B

2

Estimation of the Composition of Oxidizing Slags in Electric-Arc Furnaces. (In Russian) A M Samarin, A. Yu. Polyakov, and L. A. Shvartsman. *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of the Technical Sciences), Dec. 1947, p. 1639-1648.

In order to estimate the slag content, it is necessary to know the oxygen content, which in turn is based on the carburization-decarburization equilibrium and the ferrous oxide activity. Shows how to determine slag composition on the basis of charts developed by the author. 11 ref.

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12

B

Diffusion in Molten Metals. (In Russian.) A. M. Samarin and L. A. Shvartsman. *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences), Dec. 1947, p. 1649-1651.

Applies the basic Stokes-Einstein formula to the above. Results of experiments on Li, Na, K, Rb, Cs, Ca, Sr, Ba, Au, Ga, Zn, Pb, Tl, Cd, and Ag show that theoretical coefficients of diffusion do not differ greatly from experimental ones.

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SAMARIN, A. M.

PA 57T22

USSR/Engin Dec 1947
Metallurgy
Furnaces, Electric-Arc

"Quantitative Determination of Status of Oxidized Slag in Electric-Arc Furnaces," A. M. Samarin, A. Yu. Polyakov, L. A. Shvartsman, Corr Members, Acad Sci USSR; Metal Inst imeni A. A. Baykov, Acad Sci USSR, 9 pp

"Izv Akad Nauk SSSR, Otdel Tekh Nauk" No 12

One of the more difficult contemporary tasks is to discover some method to determine amount of iron ore used during smelting in Martin furnaces, or the oxidizing period necessary in simple electric-arc

57T22

USSR/Engin (Contd) Dec 1947

furnace. Authors present results of their quantitative determination of necessary oxidation ability of slag, with aid of method they consider to be the most exact yet suggested. Submitted, 15 Jul 1947.

57T22

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M. PA 57T60

USSR/Metals Dec 1947
Diffusion
Math, Applied

"Diffusion in Molten Metals," A. M. Samarin, L. A. Shvartsman, Corr Members, Acad Sci USSR, Metal Inst imeni A. A. Baykov, Acad Sci USSR, 2½ pp

"Izv Akad Nauk SSSR, Otdel Tekh Nauk" No 12

Authors wish to point out that equations suggested by Stokes and Einshtein give correct approximations for diffusion of metals, for low and high temperatures. Mention, however, that all experiments on observation of diffusion in molten metals are very limited. Submitted, 15 Jul 1947.

[redacted] 57T60

Evaluation B-76608

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SAMARIN, A. M.

PA-24T71

Sep 1947

USSR/Metals
Carbon
Steel

"Kinetics of Burning Carbon Out of Steel Vats," L. A. Shvartsman, A. M. Samarin, M. I. Temkin, 6 pp

"Zhur Fiz~~iches~~ Khim" Vol XXI, No 9 -Y-1027-32

The author investigated the rate of burning carbon out of molten steel in the crucible of induction furnaces while air is in contact with the surface of the metal. He discovered that the speed of the process under these conditions is determined by the speed of diffusion of the carbon over the surface of the metal. Experiments were conducted at the Moscow Institute of Steel. Reference is made to a US article, "Basic Open-Hearth Steelmaking, "Physical Chemistry of Steelmaking Committee, New York, 1944

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CA

9

Distribution of sulfur and oxygen between molten iron and basic slags. A. M. Samarin and L. A. Shvartsman (Inst. Metallurgii im. A.A. Baĭkova, Akad. Nauk S.S.S.R.). *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1948, 1457-62.—The expression for the distribution coeff. of S between liquid Fe and the slag, $K_S = N_{Fe} N_S/x_S$ (where x_S = % of S dissolved in the metal, and N the respective mole fractions of the ions Fe^{++} and S^{--} in the slag), and the analogous expression for K_O, the distribution coeff. of O, are valid for an ideal ionic soln. and actually hold for slags contg. not over 10 wt. % SiO_2. At higher SiO_2 contents, the activities can no more be identified with the N, but, provided the activity coeffs. of S^{--} and O^{--} are equal, the distribution of S, for slags with not over 20-25% SiO_2, assumed to be all present in the form of SiO_4^{--}, is $K_S = K_O N_S x_O/N_O x_S$, where K_O is the const. distribution coeff. valid for a slag of pure FeO. The general problem of the distribution of S between metallic Fe and a slag of any given compn. is solved on the assumption that the activity coeff. γ_{Fe} of Fe^{++} is = 1, and the deviation from ideality is due entirely to the ions O^{--} and S^{--}; this gives $K_S = N_{Fe}\gamma_S N_S/x_S$ and $K_O = N_{Fe}\gamma_O N_O/x_O$. The activity coeffs. γ_O of O^{--} can be calcd. from the soly. data of Winkler and Chipman (*C.A.* 40, 3083[9]); for slags with less than 1 mole SiO_2 per 2 moles of bivalent metal oxide, these data yield the empirical linear relation $\log \gamma_O = 1.53 N_{SiO_4^{--}} - 0.17$. As an example of a numerical calcn., one finds, for the arbitrarily chosen slag No. 23 of W. and Ch. (CaO 15.86, SiO_2 15.70, FeO 50.25, Fe_2O_3 5.93, MgO 9.14, S 0.038, P_2O_5 1.05, MnO 2.08%), at 1635°, N_{Fe} = 0.59, N_O = 0.74, and $N_{SiO_4^{--}}$ = 0.26 (with all P assumed to be present in the form of PO_4^{---}, and the latter included in SiO_4^{--}); hence, by the above empirical relation, γ_O = 1.70, and with the soly. of O in Fe at 1635° taken = 0.23%, x_O = 0.193%, as against the exptl. 0.183. For S, the agreement is not so good, the calcd. x_S (with K_S = 0.08) being = 0.0145%, as against the exptl. 0.023. The discrepancy is ascribed mainly to analytical errors linked with the small amts. of S. The formula holds between SiO_4^{--} = 0.10 and ~0.09, in mole fractions (10-30 wt. %), and loses its validity from SiO_4^{--} = 1 upwards, i.e. for SiO_2 contents higher than those corresponding to the simple orthosilicate. This means that even before the orthosilicate ratio is reached, SiO_4^{--} ions undergo decompn. with formation of polysilicate ions. Inclusion of the PO_4^{---} ion in the amt. of SiO_4^{--} ions is justified by the fact that points so detd. fit well into the straight line representing $\log \gamma_O$ as a function of $N_{SiO_4^{--}}$. That, contrary to Khelmun (*C.A.* 41, 2674a), the deviation of high-SiO_2 from ideality is in no way due to a specific influence of Ca^{++}, follows from the near identity of γ_O in slags high in CaO and slags from CaO but high in MnO. Presence of Al_2O_3 has approx. the same effect on x_S as SiO_4^{--} and PO_4^{---}, which means that it is present mainly in the form of the anion AlO_3^{---}.

N. Thon

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1ST AND 2ND ORDER

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Zhur. Fiz. Khim.

The kinetics of combustion of manganese, silicon, and sulfur in molten iron. A. M. Samarin and L. A. Shvartsman (Inst. Steel, Moscow). *J. Phys. Chem.* (U.S.S.R.) 22, 865-74(1948) (in Russian); cf. *C.A.* 42, 2496d.—If the slag form is immediately removed, the concn. c of Mn, Si, and S in molten Fe in contact with air decreases according to $-dc/dt = hc$; h seems to be independent of temp. between 1670 and 1700°. For Mn it was shown that $h = h's/m$, s being the area of contact melt/air and m the mass of the melt. The values of h' were 1.56, 1.20, and 0.27 g./sq. cm. min. for Mn, Si, and S. By assuming the rate of combustion to be detd. by the rate of diffusion and the diffusion coeff. of Mn in molten Fe to be 9.60 sq. cm./day (cf. Paschin and Hauttmann, *C.A.* 30, 1005[2]) the diffusion coeffs. of Si, N, C, and S are 7.20, 3.28, 2.23, and 1.66 sq. cm./day, resp.; the value for N is computed from the expts. by Chipman and Murphy (*C.A.* 30, 4715[2]). The thickness of the diffusion layer is about 0.1 mm. J. J. Bikerman

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SAMARIN, A. M.

Samarin, A. M. and Yedneral, F. P., "Eliminating Nitrogen in the Process of Smelting in an Electric Arc Furnace." Symposium, "Properties of Steel," Metallurgizdat, 1949.

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CA

9

Viscosity of liquid iron-carbon alloys. A. M. Samarin and L. A. Shvartsman. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1949, 891-9.—Viscosity of molten metals and alloys as a function of temp. can be detd. by (1) $\eta = c/(V - \omega)$, where V is the sp. vol. and c and ω are consts., or by (2) $\eta = Ae^{E/kT}$, where A is a function of pressure, E is the energy of activation, and k is the Boltzman const. Viscosity as a function of compn. and temp. can be detd. by the equation $\eta = 1/(V_{T_0} - \omega)Ae^{E/kT}$, where V_{T_0} is the vol. of the liquid at a certain const. temp. H. W. R

1957

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CA

Activities of carbon and of oxygen dissolved in liquid iron

A. M. Samarin and L. A. Shvartsman (Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1949, 1231–4.—The deviations from ideality established by Marshall and Chipman (*C.A.* 36, 6118[3]) for the equil. between C and O dissolved in liquid Fe and gaseous CO can be accounted for without assuming significant soly. of CO in Fe. The activity coeffs. γ of C in soln. in liquid Fe are calcd. with the use of Temkin and Shvartsman's (*C.A.* 43, 7314*h*) formula for the soln. in solid Fe, $\gamma = 1/(1.5\ N)$ (where N = at. fraction of C in soln.), based on the interstitial nature of austenite. This calcn. gives, for 0.0, 0.2, 0.5, 0.75, 1.0, 1.5, 2.0 wt. % C, γ (C) = 1.00, 1.04, 1.11, 1.17, 1.23, 1.46, 1.65; these values are not in good numerical agreement with the data of M. and C., but the trend of the variation is correct. The deviation of the actual O content from the ideal equil. is explained by the expansion of the free vol. v as a result of the interstitial soln. of C. This is taken to be $v = V - \omega$, where V = sp. vol., and ω is a const. close to the sp. vol. of the solid phase at the m. temp. The activity coeff. of dissolved O is $\gamma = b/v = b/(v - \omega)$. With the data ω = 0.1361 cc./g., V (at 1600°) = 0.1397, b = 0.0036. This gives, at C = 0.0, 0.2, 0.3, 0.4, 0.5, 1.0, 1.5, 2.0 wt. %, γ (O) = 1.00, 0.53, 0.48, 0.45, 0.43, 0.36, 0.33, 0.29, not all too different from the exptl values of M. and C., and varying in the right direction. The effect of C on the O content in liquid Fe is twofold. Increase of the C content decreases the O content as a result of the chem. reaction; on the other hand, the substitutional soly. is increased somewhat as a result of the increase of the free vol. This accounts for the fact that γ(O) is less than 1. The increase of the free vol. as a result of the high C content may account for the high gas satn. of cast iron. N. Thon

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SAMARIN, A. M.

USSR/Chemistry - Vanadium, Reduction of Jan 49
Chemistry - Reduction, of Vanadium

"Problem of the Reduction Ability of Vanadium," A. M. Samarin, Corr Mem, Acad Sci USSR, A. Yu. Polyakov, Inst of Metal imeni A. A. Baykov, Acad Sci USSR, 14 pp

"Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk", No 1

Attempts approximate, quantitative evaluation of vanadium's reducing ability by comparing its behavior with silicon, both having been dissolved in liquid iron during their slow oxidation by atmospheric oxygen in high-frequency electric furnace with 50-kg capacity.

24/49T10

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SAMARIN, A. M.

21777 SAMARIN, A. M. i YEDNERAL, F. P. Udaleniye azota v protsesse plavki v dugovoy elektricheskoy pechi. Sbornik (Mosk. in-t stali im. Stalina), 28, 1949, s. 46-61. - Bibliogr: 14 nazv.

SO: Letopis' Zhurnal'nykh Statey, No.29, Moskva, 1949

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

173T83

SAMARIN, A., M.,

USSR/Metals - Chromium Oct 50

"Solubility of Nitrogen in Liquid Chromium and Fused Baths of Chromium and Silicon," V. S. Mozgovoy, A. M. Samarin, Corr Mem, Acad Sci USSR Metallurgical Inst imeni A. A. Baykov

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 10, pp 1529-1536

Studies effect of silicon on N soly. Shows soly of N in Cr decreases with temp elevation and with increase in contents of Si.

173T83

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

PA 173T86

SAMARIN, A. M.

USSR/Metals - Ferrous Alloys Nov 50

"Influence of Silicon on the Thermodynamic Behavior of Carbon Dissolved in Solid and Liquid Iron," A. M. Samarin, Corr Mem, Acad Sci USSR, L. A. Shvartsman, Metallurgical Inst imeni A. A. Baykov

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 11, pp 1696-1700

Using existing exptl data, attempts to clarify physical nature of influence of Si on the activity of C in austenite and on C-soly in liquid Fe.

173T86

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3

778

VANADIUM OXIDES. A. Yu. Polyakov and A. M. Samarin. Uspekhi Khim. 19, 565-75(1950) Sept.-Oct. (In Russian).

In a critical survey of the present state of knowledge of vanadium oxides, it is pointed out that experimental data on phase equilibria in the system vanadium-oxygen and on dissociation characteristics of vanadium oxides are still incomplete and inaccurate. On the other hand, several thermodynamic properties of V and its oxides (heat capacities, entropies, heats of formation) have been determined with sufficient ampleness to permit calculations of physico-chemical relationships (free-energy changes, dissociation pressures) with better accuracy than that offered by direct measurements. As a consequence, the latter may lead to false conclusions, such as, e.g., an erroneous attribution to V (in oxidation to V_2O_5) of a higher affinity for O than that exhibited by Si. Among the literature cited (mostly non-Russian) is one of the co-author's work on vapor pressure of V_2O_5 in the temperature interval 700 to 1200°C (Polyakov, Zhur. Fiz. Khim. 20, 1021 (1946)).

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

CA

9

Solubility of nitrogen in liquid chromium and in melts of chromium and silicon. V. S. Morgovol and A. M. Samarin. *Doklady Acad. Nauk S.S.S.R.* 74, 729–32(1950). An exptl. study was made with Cr contg. Fe 1.04, Al 0.6, Si 0.2, N 0.15, and Si contg. Al 0.78, Fe 0.20, C 0.04%. Fifty g. of alloy was heated by induction in a magnesite crucible in a quartz tube contg. purified N at 1 atm. Equil. was reached in 30 min., and runs were made for 40 min. Temps. were measured to ±15° with an optical pyrometer. The equil. concns. of N in wt. % in liquid Cr were 1600°, 4.08; 1650°, 3.90; 1700°, 3.84; 1725°, 3.76; 1750°, 3.54. From these data it was concluded that the interaction of liquid Cr and N occurs according to the reaction: $2\ Cr + {}^1/_2\ N_2 \rightleftarrows Cr_2N$ which $\Delta F = -7504.5 + 1.2727\ T$. X-ray examn. of the high N specimen showed the presence of a body-centered cu. Cr phase and the Cr_2N phase with a close-packed hexagonal structure, $a = 2.74 \pm 0.002$ A., $c = 4.45 \pm 0.01$ A. The soly. of N in Cr contg. 1.5, 7.25, 10.00, and 20.00% Si was 3.83, 1.98, 0.84, 0.33 at 1600°; 3.68, 1.89, 0.74, 0.30 at 1650°; 3.54, 1.72, 0.69, 0.28 at 1700°; 3.08, 1.68, 0.62, 0.26 at 1750°. At all Si contents ΔH was about −10,980 cal. At 1600° the soly. of N decreased with increasing Si content up to 40% Si and no special effect near CrSi was observed.

A. G. Guy

1951

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

USSR/Metals - Iron, Structure Mar 51

"Influence of Carbon on the Activity of Sulfur Dissolved in Liquid Iron," A. M. Samarin, Corr Mem, Acad Sci USSR, L. A. Shvartsman, Inst of Metallurgy imeni A. A. Baykov, Acad Sci USSR

PA 190T85

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 3, pp 407-410

At carbon content of about 1%, activity coeff of sulfur exceeds unity and increases with further increase of carbon. Shows effect of carbon on sulfur activity may be evaluated on the basis of following assumption: Number of places for carbon

190T85

USSR/Metals - Iron, Structure (Contd) Mar 51

and sulfur in soln approximates 1/4 of the number of iron atoms, whereas an elementary "cell" cannot simultaneously contain both sulfur and carbon atoms.

190T85

SAMARIN, A. M.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

Great Russian metallurgist, P.P.Anosov. Trudy po ist.tekh. no.1:35-52 '52. (MLRA 6:7)

(Anosov, Pavel Petrovich, 1797-1851)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

1. SAMARIN, A. M.

2. USSR (600)

4. Industrial Arts - History

7. Results and tasks of scientific research in the field of history of engineering. Izv. AN SSSR. Otd. tekh. nauk no. 7, 1952

9. Monthly List of Russian Accessions, Library of Congress, January 1953, Unclassified.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

PA 244T78

USSR/Metallurgy - Deoxidizers, Vanadium Dec 52

"Deoxidizing Capacity of Vanadium," R. A. Karasev, A. Yu. Polyakov, A. M. Samarin, Corr Mem Acad Sci USSR

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 12, pp 1794-1801

Disputes accuracy of results obtained by US investigators J. Chipman and M. N. Dastur considering their evaluation of reducing capacity of V too high. Describes equipment and method for more precise determination, establishing that V not only decreases

244T78

solubility of O in liquid iron but also reduces O activity. Finds V inferior to Si as deoxidizer.

244T78

SAMARIN, A. M.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

(2)
Chem

Chem Abs., v. 48, 1-10-54
Electrochemistry

Electrochemical studies of mixtures of molten oxides. A. M. Samarin and L. A. Shvartsman. *Uspekhi Khim.* 21, 337-50(1952).—Review with 33 references. I. M. K.

MF 7-13-54

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

BARDIN, I. P., ACAD., SAMARIN, A. M.

Metallurgy

Great construction projects of the Stalin epoch and the tasks of metallurgists. Vest. AN SSSR 22 No. 5, 1952.

Monthly List of Russian Accessions, Library of Congress October, 1952. UNCLASSIFIED.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

**TT.448 (Solubility and activity of oxygen in iron and vanadium melts) Rastvorimost'i aktivnost' kisloroda v rasplavakh zheleza i vanadiia.
DOKLADY AKADEMII NAUK SSSR, 85(6): 1313-1316, 1952

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 467 - I

Call No.: TN 730.M36

BOOK

Authors: MCHEDLISHVILI, V. A. and SAMARIN, A. M.

Full Title: STUDY OF DEOXYDIZING STEEL WITH SILICON-MANGANESE AS DEOXIDIZER

Transliterated Title: Izucheniye raskisleniye stali silikomargantsem

PUBLISHING DATA

Originating Agency: Academy of Sciences of the USSR

Publishing House: Academy of Sciences, USSR, Institute of Metallurgy im. A. A. Baykov

Date: 1953 No. pp.: 38 No. of copies: 4,000

Editorial Staff: None

PURPOSE: This booklet gives experimental data which may be applied as the basis for proper determination of the best composition of the silicon and manganese alloys used for the deoxidation of steel.

TEXT DATA

Coverage: This booklet gives the description and results of experimental tests made to determine the influence of the composition of silico-manganese deoxidizers used for preliminary deoxidation of steel on 1) the amount of impurities as non-metallic inclusions remaining in the finished steel, 2) the composition and size of those non-metallic inclusions, and 3) the characteristics and mechanical properties of steel. Many photos and tables supplement the text.

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APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

Izucheniye raskisleniya stali silikomargantsem AID 467 - I

No. of References: 10, all Russian (1915 - 1951)
Facilities: None

2/2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

AGEYEV, N.V.; PAVLOV, I.M.; SAMARIN, A.M.

[Problems in metallurgy] Problemy metallurgii. [Akademiku Ivanu Pavlovichu Bardinu k semidesiatiletiiu. Redaktsionnaia kollegiia: N.V.Ageev, I.M. Pavlov, A.M.Samarin. Otvetstvennyi redaktor A.M.Samarin]. Moskva, 1953. 483 p. (MLRA 7:6)

1. Akademiya nauk SSSR. 2. Chlen-korrespondent Akademii nauk SSSR. (Metallurgy)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

(2)

Evaluation of the results of determining oxygen content in steel by the chemical method and by vacuum fusion. V. A. Mchedlishvili and A. M. Samarin. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1953, 378-82.—It is shown that although the vacuum fusion method gives results for O in steel that agree with those obtained by calcn. from the analytical data on nonmetallic inclusions as obtained by anodic soln. of the steel, the best results from the vacuum method are obtained only when the procedure is selected in accordance with the nature and content of oxide inclusions. In a series of samples contg. 0.005–0.012% O it was shown that the results of the 2 methods give ratios ranging from 0.75 to 1.20. Usually the vacuum method gives lower results. Increased content of free or combined alumina generally leads to increased deviation in the 2 methods.

G. M. Kosolapoff

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Metallurgy and Metallography

(3 met)

Solubility of oxygen in alloys of iron-chromium and iron-chromium-nickel. B. V. Linchevskii and A. M. Samarin. *Izvest. Akad. Nauk S.S.S.R. Otdel. Tekh. Nauk* 1953, 691-704.—Ni increases the soly. of O in Fe-Cr alloy melts. In compns. with more than 16% Cr a further increase of Cr concn. raises O soly. by the formation of sol. Cr oxide (CrO). Examn. of inclusions in the alloys showed that the products of oxidation of Cr dissolved in liquid Fe are $FeOCr_2O_3$ and Cr_2O_3. Under 6% Cr the reaction is $FeOCr_2O_3 + 4H_2 \rightarrow Fe + 2[Cr] + 4H_2O$, with $\Delta F°$ 336,000 − 167.06T; log $K = -(73440/T) + 36.50$. At Cr content 6-16%: $Cr_2O_3 + 3H_2 \rightarrow 2[Cr] + 3H_2O$, with $\Delta F°$ 248,810 − 125.4T; log $K = -(54380/T) + 27.41$. At Cr content above 16% the reaction is: $[CrO] + Cr_2O_3 + 4H_2 \rightarrow 3[Cr] + 4H_2O$ with $\Delta F°$ 232,190 − 126.91T; log K − $(50750/T) + 27.74$. The process was studied in the system of melt-oxide film-gas phase of steam and H. G. M. Kosolapoff

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

B

(2) Met

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Metallurgy and Metallography

Activity of carbon and oxygen in melts of iron-carbon-oxygen. A. M. Samarin and R. A. Karasev. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1953, 1130-6; cf. *C.A.* 45, 4187*d*; Marshall and Chipman, *C.A.* 36, 6118[1].—In Fe melts contg. less than 1% C the activity coeffs. of C and O are substantially constant quantities. Results obtained at 1540° by M. and C. were examd., and the values of CO and CO_2 partial pressures recalcd. Since the differentiated form of the reaction equation can be written as: $\log(P'_{CO}/P_{CO_2}) = \log K_1 + \log f_c + \log [\%C]$, the necessary terms were calcd. from the above data. Up to 1% C content the plot of $\log(P'_{CO}/P_{CO_2})$ against $\log[\%C]$ gave a straight line, indicating clearly that the activity coeff. of C in liquid Fe contg. O is constant. Values from compns. with more than 1% C were too few to be employed in calcns., but their scattering on the plot was noted. A. M. Kosolapoff

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

USSR

The solubility of oxygen in molten iron, chromium, and nickel. S. V. Bezobrazov and A. M. Samarin. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1953, 1790-6.—The thermodynamic function is detd. experimentally of an interaction between the Cr and the O dissolved in Ni, and of the soly. of O in Cr-Ni alloys resulting from the reaction with steam and the formation of Cr oxides ($Cr_{xl} + xH_2O = xH_2 + CrO_x$). The ratio $p_{H_2O}:p_{H_2}$ at equil. dets. the activity of O in the melt. When 4-15% Cr is dissolved in the alloy, Cr is oxidized to Cr_2O_3, and the equil. temp. coeff. is const., given by $\log K' = -(15980/T) + 3.90$. The greater soly. of O in alloys contg. more than 15% Cr is attributed to the formation of higher oxides of Cr in addn. to Cr_2O_3. Replacing the Ni in the Ni-Cr alloys by Fe lowers the soly. of O when the Cr concn. is 20-30%. Soly. of O rises with the temp.

W. M. Sternberg

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

D.K. Chernov's work in the field of steel smelting and casting. Trudy po ist. tekh. no.2:16-32 '53. (MLRA 6:6)
(Steel--Metallurgy) (Chernov, Dmitrii Konstantinovich, 1839-1921)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.
Production of Steel

SAMARIN, A.M.

Oxygen Solubility in Molten Iron-Chromium and Iron-Chromium-Nickel Alloys. B. V. Linchevskii and A. M. Samarin. (*Izvestiya Akademii Nauk S.S.R., Otdelenie Tekhnicheskikh Nauk*, 1953, (5), 691–704). [In Russian]. The influence of chromium on the solubility of oxygen in liquid iron was studied by determining the state of equilibrium in the system: metal-bath/oxide-film/gas phase. It was found that, depending on the chromium content in liquid iron, the oxidation products of chromium in the metal are chromite ($FeO.Cr_2O_3$), chromic oxide, and chromous oxide. The results of metallographic investigations of non-metallic inclusions, the study of inclusions isolated by anodic solution of the alloys, and X-ray analysis of oxide phase, confirm that the products of oxidation of chromium dissolved in liquid iron are $FeO.Cr_2O_3$ and Cr_2O_3. In melts containing above 16% of chromium, an increase in the chromium concentration increases oxygen solubility. This is explained by the formation of chromous oxide soluble in liquid iron. It was also found that nickel increases the oxygen solubility in iron-chromium melts.—v. o.

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

J. of the Iron & Steel Inst.
v-176 Feb 1954
Production of Steel

The Activities of Carbon and Oxygen in the System Liquid-Iron/Carbon/Oxygen. A. M. Samarin. and R. A. Karasev. (*Izvestiya Akademii Nauk S.S.S.R., Otdelenie Tekhnicheskikh Nauk*, 1953, (8), 1130–1136). [In Russian]. The results of Marshall and Chipman on the dependence on concentration of the activity coefficients of carbon and oxygen in molten iron are discussed. It is concluded that in molten iron-carbon alloys containing up to 1% of carbon the activity coefficients of carbon and oxygen are constant.—v. o.

Met 2

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

YAROTSKIY, A.V.; SAMARIN, A.M., chlen-korrespondent.

New data on P.L.Shilling's activity. Izv.AN SSSR Otd.tekh.nauk no.6: 934-939 Je '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Samarin).
(Shilling, Pavel L'vovich, 1786-1837) (Telegraph)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

YELISEYEV, A.A.; MURZINM, A.M.; SAMARIN, A.M., chlen-korrespondent Akademii nauk SSSR.

An outstanding Russian physicist of the 18th century. Two hundredth anniversary of the death of G.W.Richmann. Izv.AN SSSR Otd.tekh.nauk no.8:1166-1174 Ag '53. (MLRA 6:8)

1. Akademiya nauk SSSR (for Samarin).
(Richmann, Georg Wilhelm, 1711-1753)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

NESTERUK, F.Ya.; SAMARIN, A.M., chlen-korrespondent.

Nicolaus Copernicus as a hydraulic engineer. Izv.AN SSSR Otd.tekh.nauk no.9: 1341-1349 S '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Samarin). (Copernicus, Nicolaus, 1473-1543)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

KOROLEV, M.L.; SAMARIN, A.M., chlen-korrespondent.

Structure and properties of chromium nitride and ferrochromium. Izv.AN SSSR Otd.tekh.nauk no.10:1465-1470 O '53. (MLRA 6:11)

1. Akademiya nauk SSSR (for Samarin). (Chromium) (Steel, Stainless)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

MOGUCHIY, L.N.; SAMARIN, A.M., chlen-korrespondent.

Investigation of the deformation focus in upsetting with and without housings. Izv.AN SSSR Otd.tekh.nauk no.10:1475-1479 O '53. (MLRA 6:11)

1. Akademiya nauk SSSR (for Samarin). (Deformations (Mechanics))

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SHUKHARDIN, S.V.; SAMARIN, A.M., chlen-korrespondent.

The first industrial model of a coal cutter-loader. Izv.AN SSSR Otd.tekh. nauk no.10:1480-1484 O '53. (MLRA 6:11)

1. Akademiya nauk SSSR (for Samarin). (Coal-mining machinery)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

VASIL'YEV, I.G.; SAMARIN, A.M., chlen-korrespondent.

V.G.Shukhov; an outstanding scientist and engineer. (On the centennial of his birth) Izv.AN SSSR Otd.tekh.nauk no.10:1485-1493 O '53. (MLRA 6:11)

1. Akademiya nauk SSSR (for Samarin).
(Shukhov, Vladimir Grigor'evich, 1853-1939)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

(2)

5

Solubility of Oxygen in Fe, Cr and Ni Fusion

Izv. Akad. Nauk, Otd. Tekh. Nauk (12), 1790-1796 1953 U.S.S.R.

S.V. Bezobrazov, A.M. Samarin

Equilibrium has been experimentally established between the gaseous phase, i.e. the mixture of water vapour and hydrogen, and a Cr and Ni fusion and an oxide which was forming thereby. It was established that the solubility of oxygen in chrome and nickel fusion would fall when chromium concentration increased, not, however, beyond 15%. Beyond that concentration solubility increases with the increase of concentration. If iron is substituted by nickel in iron-chrome fusion and providing that chrome concentration lies between 20 and 30% solubility of oxygen decreases. Solubility of oxygen increases with rising temperature. (Bibl. 3)

Index Aeronauticus
June 1954
Metallurgy

Evaluation B-81524

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

Ivan Pavlovich Bardin, member of the Academy of Sciences; on his 70th birthday. Izv.AN SSSR Otd.tekh.nauk no.12:1877-1880 D '53. (MLRA 7:2)

1. Chlen-korrespondent Akademii nauk SSSR.
(Bardin, Ivan Pavlovich, 1883-)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

Samarin, A. M.

Oxidation of chromium dissolved in liquid iron. B. V. Linchevskiĭ and A. M. Samarin. *Doklady Akad. Nauk S.S.S.R.* 89, 701-4(1953). The equil. condition in the system Fe–Cr–(H_2 + H_2O) was studied in the temp. range 1625–1710°. The basic equil. equation (1) $\log K = \log[\%Cr] + x \log(p_{H_2O}/p_{H_2})$, can be applied, with correction, to 3 separate ranges of the Cr contents of Fe. With Cr contents 0–6% the equil. equation is (2) $FeO + Cr_2O_{3(s)} + 4H_{2(g)} = Fe_{(s)} + 2[Cr] + 4H_2O$, $\Delta F = 336{,}000 - 167.00\,T$ ($x = 2$). In the range Cr 6–16% the value of x (equation 1) is 3/2, and the equation (3) $Cr_2O_{3(s)} = 2[Cr] + 3[O]$; $\Delta F = 361{,}280 - 179.377\,T$. The value of the coeff. x drops to 4/3 for Cr contents above 16%, and the equil. is expressed by (4) $[CrO] + Cr_2O_{3(s)} = 3[Cr] + 4[O]$; $\Delta F = 382{,}150 - 198.87\,T$. The content of Cr is clearly indicated by the color of the scale forming on the steel sample. With 5 to 7% Cr in steel the color of the scale is deep violet, lilac, gray, or grayish blue. With higher Cr contents the color turns to green and reaches eventually deep green at very high Cr levels. M. G. Holowatyr

62

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APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.; LINCHEVSKIY, B. V.

"Effect of Nickel on the Solubility of Oxygen in Chromium-Iron Melts," Doklady Akademii Nauk SSSR 89 (1953) No. 5, pp 867/868.

(CA 47 no.19: 9888 '53)

B-76505, 25 Jun 54

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

Influence of nickel on the solubility of oxygen in molten iron and chromium. B. V. Linchevskii and A. M. Samarin. *Dokl. Akad. Nauk. SSSR*, 1953, 90, 867-868. Solubility of O_2 in molten Fe-Cr-Ni steels containing 4-20% of Cr and 3-22% of Ni is determined at 1625° [illegible] assuming that the equilibrium [illegible] even the gas phase [illegible] imposed [illegible] [illegible] that [illegible] content increases the solubility of O_2 in the [illegible]

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

ANOSOV, Pavel Petrovich, 1797-1851; VOLODINA, N.I., redaktor; BARDIN, I.P., akademik, redaktor; GUDTSOV, N.T., akademik, redaktor; SAMARIN, A.M., redaktor; STARK, B.V., redaktor; PROKOSHKIN, D.A., doktor tekhnicheskikh nauk, redaktor; VISHNYAKOV, D.Ya., doktor tekhnicheskikh nauk, redaktor; DAVIDENKOV, V.A., doktor tekhnicheskikh nauk, redaktor; RASTEGAYEV, M.V., kandidat tekhnicheskikh nauk, redaktor; SOROKIN, Yu.N., kandidat tekhnicheskikh nauk, redaktor; MURZIN, I.I., inzhener, redaktor; ASTAF'YEVA, G.A., tekhnicheskiy redaktor

[Collected works] Sobranie sochinenii. Moskva, Izd-vo Akademii nauk SSSR, 1954. 204 p. (MLRA 7:10)

1. Chlen-korrespondent AN SSSR (for Samarin, Stark)
(Metallurgy)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

Deoxidation of Steel with Silicon and Manganese. L. S. Kulikov and A. M. Samarin. (*Izvest. Akad. Nauk S.S.S.R., Oddelenie Tekhn. Nauk*, 1954, Oct., 23-30). Thermodynamic equations are given and equilibrium constants determined. Activities for the oxides at 1550° C are shown in terms of concentration and measured values compared with the theoretical [illegible] Measurements of interfacial tension measurements [illegible] the interpretation in practical terms.

TGMT

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

FD-814

USSR/Engineering - Metallurgy

Card 1/1 : Pub. 41 - 6/17

Author : Bobkova, O. S., and Samarin, A. M., Corr Memb, Acad of Sci, USSR

Title : Relation between surface tension of chromium-nickel melts and certain properties of chromium-nickel alloys

Periodical : Izv. AN SSSR, Otd. tekh. nauk 2, 52-59, Feb 1954

Abstract : Investigates effect of surface tension of melts on hardness and impact strength of Cr-Ni alloys. Describes procedure of determining surface tension by the method of maximum pressure in gas bubble and studies effect of boron on surface tension in melts with or without additions of titanium, discussing also amount and effect of nonmetallic inclusions in alloys obtained from these melts. Tables, diagrams. Two references.

Institution :

Submitted : January 29, 1954

Evaluation B-81524

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

USSR/Engineering - Metallurgy

Card 1/1 : Pub. 41-9/18

Author : Grigoryan, V. A. and Samarin, A. M., Corresponding Member, Academy of Sciences, USSR

Title : Establishing the sources of contamination of ball-bearing steel with nonmetallic inclusions with the aid of calcium radioactive isotopes

Periodical : Izv. AN SSSR. Otd. tekh. nauk 3, 91-101, March 1954

Abstract : Discusses application of the method of radioactive indicators for determining the extent of contamination of steel with non-matallic inclusions in the process of melting and pouring, and establishes sources of inclusions in steel melted in high-frequency induction furnaces and in electric-arc furnaces with basic or acid lining. Tables.

Institution :

Submitted : February 4, 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

FD-1383

USSR/Engineering - Metallurgy

Card 1/1 : Pub. 41-10/18

Author : Vishnyakov. A. V. and Samarin, A. M., Corresponding Member, Academy of Sciences, USSR

Title : The effect of blowing with carbon monoxide on the quality of steel made in electric furnaces

Periodical : Izv. AN SSSR. Otd. Tekh. nauk 3, 102-109, 1954

Abstract : Discusses possibility of purifying molten steel through removal of hydrogen and nitrogen by blowing with carbon monoxide, this accelerating steel melting because part of oxidation period may be replaced by blowing with carbon monoxide during reducing period. Also discusses purification of steel by removal of sulfur, oxygen, and nonmetallic inclusions. Tables, diagrams, micrographs

Institution :

Submitted : March 25, 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

USSR

Complex deoxidation of steel with silicon and manganese. I. S. Kulikov and A. M. Sumatin. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* [illegible] 10, 23-30.—A thermodynamic study was made of the effects of Mn on the deoxidizing power of Si and of the compn of the different deoxidation products with different concn of Si and Mn in the metal. The equil. const. of Mn, Si, and their oxidation products is applied to the deoxidation of steel and the rates [illegible] with Si and [illegible]

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

Samarin, A. M.

USSR

The influence of the smelting method on the properties of high-speed steel. Kim Den Son and A. M. Samarin. Izvest. Akad. Nauk S.S.S.R., Otdel Tekh. Nauk 1954, No. 11, 27-35.—The investigation was planned to study the effects of a partial or complete substitution of ferrotungsten with wolframite in the smelting of high-speed steel upon the properties of the latter and to develop smelting methods involving min. losses of W. Such substitution was found thermodynamically possible and this was confirmed experimentally. The W losses are not affected by the nature of the alloying material and are around 3%. The Mn content of the finished steel is higher when wolframite is used and may reach 0.7% when ferrotungsten is completely substituted with wolframite. The cutting quality of the steel is unaffected by the substitution, but a proper thermal treatment of the steel with higher Mn content requires further study. M. Strassberg

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APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.; FILIPPOV, A.F., kandidat tekhnicheskikh nauk.

Investigating the sigma phase in chromium-nickel alloys. Sbor.Inst. stali no.32:97-104 '54. (MLRA 10:5)

1.Chlen-korrespondent AN SSSR (for Samarin) 2.Kafedra elektrometallurgii.
(Chromium-nickel steel--Metallography)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

Influence of deoxidizing with vanadium, titanium, and zirconium on nonmetallic inclusions in ball-bearing steel.

mech properties ... performed in a VCh-vacuum induction ... nesite crucible. Evaluation of heats for II was computed by ... Ukraisnki Inst. for Metals and by a standard scale ... method it was

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

[Using artificial radioactive isotopes for studying iron and steel production processes] Primenenie iskusstvenno-radioaktivnykh izotopov pri izuchenii protsessov proizvodstva stali i chuguna. Moskva, 1955. 20 p. (MIRA 14:7)

(Iron industry) (Steel industry)
(Radioisotopes—Industrial application)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.; KALINNIKOV, E. C. (Engr.)

"The Effect of Ladle and Groove Lining upon the Clogging of Ball Bearing Steel by Impurities," in book The Application of Radioisotopes in Metallurgy, Symposium XXXIV; Moscow; State Publishing House for Literature on Ferrous and Nonferrous Metallurgy, 1955.

A. M. SAMARIN, Member, Academy of Sciences USSR; E. C. KALINNIKOV, Engr./Chair of Electro-Metallurgy, Moscow Inst. of Steel im I. V.Stalin.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

"The Use of Artificially Radioactive Isotopes in the Study of the Processes of the Production of Steel and Iron," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

Samarin, A. M.

3

4036 AEC tr-2435(Pt. 3 pp. 1-16)
THE ROLE OF THE REFRACTORY LININGS OF STEEL-PRODUCING EQUIPMENT IN THE CONTAMINATION OF STEEL BY NON-METALLIC INCLUSIONS. E. S. Kaltunikov and A. M. Samarin. p. 1-16 of the CONFERENCE OF ACADEMY OF SCIENCES OF THE USSR ON THE PEACEFUL USES OF ATOMIC ENERGY JULY 3-5 1955

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This paper was originally abstracted from the Russian and appeared in Nuclear Science Abstracts as NSA 9-7753.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

Influence of refractory material of steel-pouring devices on the contamination of steel with nonmetallic inclusions. E. S. Kalinnikov and A. M. Samarin. *Sessiya Akad. Nauk S.S.S.R. po Mirnomu Ispol'zovaniyu Atomnoi Energii 1955, Zasedaniya Otdel. Tekh. Nauk*, 3-27 (English summary, 27-8).—The effects of ladle lining on the contamination of steel was studied by incorporating Ca^{45} into the refractories compn. and measuring the radioactivity of the nonmetallic residue obtained after dissolving the steel. The amt. of impurities in steel was found to be greatest with fire brick and least with alumina used as ladle lining.

W. M. Sternberg

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APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

FD-2992

USSR/Engineering - Metallurgy

Card 1/1 Pub. 41-5/12

Author : Averin, V. V., Polyakov, A. Yu., and Samarin, A. M., Moscow

Title : The activity of oxygen in liquid iron

Periodical : Izv. AN. SSSR. Otd. Tekh. Nauk, 3, 90-107, March 1955

Abstract : Describes the experimental method used and the results obtained in the study of the activity of oxygen in liquid iron and its effect on the iron. The gas-metal equilibrium at different temperatures was determined. The effects of hydrogen gas were studied. Concludes that the activity of oxygen in liquid iron depends on the temperature as well as the oxidizing potential of the gas; proper equilibrium of oxygen is essential for oxidation of metals; oxygen escapes from the molten metal during its crystallization and cooling. Graphs, diagrams, photographs, tables, formulae. Fifteen references, 4 USSR.

Institution :

Submitted : February 1, 1955

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SARMARIN, A.M.

USSR/Engineering -- Metallurgy FD-2621

Card 1/1 : Pub. 41-7/21

Author : Shvartsman, L. A. and Sarmarin, A. M., Moscow

Title : Investigation of the physical-chemical properties of slag melts

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 4, 73-97, Apr 1955

Abstract : Examines some results of experimental investigation which characterize slags as ionic systems. Discusses electrochemical investigation, surface tension, viscosity, and density of melts and cryoscopic measurements. Indicates that the theoretical data on the structure of silicates is still far from complete. This is so because of the complex relationship between the constituent atoms in the heat, which relationship is not limited by purely electrostatic forces but also includes covalence bonds related to the interpolarization of the ions. Formulae, tables. Forty-one references, 18 USSR.

Institution :

Submitted : March 7, 1955

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

FD-2751

USSR/Engineering - Metallurgy

Card 1/1 Pub 41 - 12/16

Author : Levenets, N. P., and Samarin, A. M., Moscow

Title : The effect of phosphorus on the solubility of oxygen in molten iron and chromium, and in iron and nickel

Periodical : Izv. AN SSSR, Otd. Tekh. Nauk 5, 133-138, May 1955

Abstract : Determines the solubility of oxygen in molten iron, containing phosphorus and chromium or phosphorus and nickel. Particularly in observing the oxidizing effect that chrome and nickel have on phosphorous. The conclusions are: increasing phosphorus content up to 1.2% in iron and chromium induces higher solubility of oxygen; temperature has little effect on solubility of oxygen; in fusion of iron, chromium and phosphorus, the phosphorus oxidizes along with chromium; solubility of oxygen in iron-nickel increases with addition of phosphorus; presence of 1% nickel in iron, containing up to 0.7% phosphorus causes lower solubility of oxygen; in fusing iron, nickel and phosphorus, the oxidation of phosphorus and nickel causes formation of iron-phosphates, nickel phosphates and nickel-oxides. Micro-photographs, graphs, tables. Two references all USSR.

Institution :

Submitted : December 30, 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M.

The influence of niobium and titanium on the properties of stainless steels. A. M. Samarin and A. A. Yaskevich. Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk 1955, No. 10, 107-16.—A comparison of the properties of stainless steels with 18% Cr and around 10% Ni, with and without about 1% Nb or 0.56% Ti show that the mech. properties after tempering and annealing were practically the same at 20 and 600°. The plasticity of Nb steel at 800° quenched from 1150° and tempered at 650° was 1.5–2 times lower than of the similarly treated Ti steel. Long tempering of the Nb steel at 800° raises its plasticity at that temp. to that of the Ti steel. Nb imparts better intercryst. corrosion properties than Ti. The acid resistance of hardened stainless steel with and without Nb and Ti is high, and practically the same, the losses in boiling HNO_3 not exceeding 0.5 g./sq. m./hr. The annealed Nb steel is more acid resistant than the Ti steel or the ordinary stainless steel. Nb imparts better weldability to the steel than Ti; the seam is denser, more resistant to intercryst. corrosion, has a 4 times greater resistance to HNO_3, and is more plastic.

A. M. Sternberg

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, Yu.M.

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN. A.M.

USSR/ Chemistry - Chemical Technology

Card 1/1 Pub. 22 - 34/51

Authors : Lyaudis, B. K., and Samarin, A. M., Mem. Corresp. of Acad. of Sc. USSR

Title : Solubility of oxygen in liquid iron containing titanium

Periodical : Dok. AN SSSR 101/2, 325-326, Mar 11, 1955

Abstract : The solubility of oxygen was investigated in Fe-Ti fusions at 1600 and 1650°. The solubility was determined by establishing the equilibrium of the fusions in a vapor-hydrogen mixture of known composition. Experiments showed that with the rise in temperature the solubility of the oxygen in Fe-Ti fusions increases. Liquid particles of reaction products obtained from iron deoxidation with titanium were observed in cases when the Ti content in Fe-Ti-O fusions did not exceed 0.04%. Table.

Institution : Acad. of Sc. USSR, The A. A. Baykov Metallurgical Institute

Submitted : December 7, 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

USSR/ Chemistry - Chemical technology

Card 1/1 Pub. 22 - 30/47

Authors : Levenets, N. P., and Samarin, A. M., Memb. Corres., Acad. Sc., USSR

Title : Oxidation of P dissolved in liquid Fe and the effect of P on the solubility of O

Periodical : Dok. AN SSSR 101/6, 1089 - 1092, Apr. 21, 1955

Abstract : It is shown that the degree and rate of oxidation of P dissolved in liquid Fe can be established by determining first the solubility of O in liquid P-containing Fe. The effect of temperature on P oxidation is discussed. The change in activities of O and P dissolved in liquid Fe is explained by the fact that other P-O compounds are being formed in addition to the conventional iron thiophosphate. Thermodynamic data regarding the reaction of oxidation of P are included. Two USA references (1949-1954). Graphs.

Institution : Acad. of Sc., USSR, The A. A. Baykov Inst. of Metallurgy

Submitted : December 2, 1954

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

18

Vacuum installation for degassing and removal of undesirable impurities from liquid metal. L. M. Novik and A. M. Samarin. U.S.S.R. 102,585, Apr. 30, 1956. Add. to ~~U.S.S.R. 81,573~~. Further improvements in the design of the vacuum app. are described. M. H.

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1-4E2c

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, Aleksandr Mikhaylovich; KARASEV, Robert Alekseyevich, kandidat tekhnicheskikh nauk; VERTMAN, Aleksandr Abramovich, inzhener; KAREV, Viktor Nikolayevich, kandidat tekhnicheskikh nauk; UDAL'TSOV, A.N., glavnyy redaktor; SHTEYNBOK, G.Yu., redaktor

[Apparatus for studying kinetic processes at high temperatures. Apparatus for studying the discharge of viscous liquids through orifices and nozzles] Ustanovka dlia izucheniia kinetiki protsessov pri vysokikh temperaturakh. Ustanovka dlia issledovaniia istecheniia viazkikh zhidkostei iz otverstii i nasadkov. Tema 4.no.P-56-457 Moskva, 1956. 15 p. (MIRA 10:5)

1. Moscow. Institut tekhniko-ekonomicheskoy informatsii. (Chemical apparatus) (Viscosity) (Fluid dynamics)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, Aleksandr Mikhaylovich; RZHEZNIKOV, V.S., redaktor izdatel'stva; ZELENKOVA, Ye.V., tekhnicheskiy redaktor

[Physical and chemical principles of the deoxidizing of steel] Fiziko-khimicheskie osnovy raskisleniia stali. Moskva, Izd-vo Akademii nauk SSSR, 1956. 160 p. (MIRA 9:9)
(Steel--Metallurgy)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A.M., otvetstvennyy redaktor; SOKOLOV, P.Ye., redaktor; KHAKHPASHEV, A.A., redaktor; GOSTEV, K.I., redaktor; FRONOV, A.P., redaktor; CHERNOV, A.N., redaktor izdatel'stva; SOMOREV, B.A., tekhnicheskiy redaktor

[Continuous casting of steel] Nepreryvnaia razlivka stali; 17-19 oktiabria. Moskva, Izd-vo Akademii nauk SSSR, 1956. 299 p. (MLRA 9:7)

1. Vsesoyuznaya konferentsiya po nepreryvnoy razlivke stali, 1st, 1955. 2. Chlen-korrespondent AN SSSR (for Samarin)
(Steel--Metallurgy) (Continous casting)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

GILBERT, William; DOVATUR, A.I.[translator]; KALASHNIKOV, A.G., redaktor; PETROVSKIY, I.G., akademik, redaktor; BYKOV, K.M., akademik, redaktor; KAZANSKIY, B.A., akademik, redaktor; SHMIDT, O.Yu., akademik, redaktor; ANDREYEV, N.N., akademik, redaktor; SHCHERBAKOV, D.I., akademik, redaktor; YUDIN, P.F., akademik, redaktor; DELONE, B.N., redaktor; KOSHTOYANTS, Kh.S., redaktor; SAMARIN, A.M., redaktor; LEBEDEV, D.M., professor, redaktor; FIGUROVSKIY, N.A., professor, redaktor; KUZNETSOV, I.V., kandidat filosofskikh nauk, redaktor; PETROVA, G.M., redaktor; AUZAN, N.P., tekhnicheskiy redaktor.

[The magnet, magnetic bodies, and the great magnet the earth; a new physiology, demonstrated by many arguments and experiments. Translated from the Latin by A.I.Dovatur] O magnite, magnitnykh telakh i o bol'shom magnite-zemle; novaia fiziologiia, dokazannaia mnozhestvom argumentov i opytov. Perevod s latinskogo A.I.Dovatura. Red., stat'ia i kommentarii A.G.Kalashnikova. Moskva, Izd-vo Akademii nauk SSSR, 1956. 411 p. (MLRA 9:6)

1.Chlen-korrespondent AN SSSR (for Delone, Koshtoyants, Samarin).
(Magnetism)

APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3"

"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

SAMARIN, A. M.

"Installation for Studying the Kinetics of Processes at High Temperatures" by A. M. Samarin, Corresponding Member, Academy of Sciences USSR, R. A. Karasev, Candidate of Technical Sciences, and Engr A. A. Vertman, Pribory i Stendy (Instruments and Stands), Moscow, 1956, No P-56-457, pp 3-11

The equipment described is used to study the kinetics of reactions at high temperatures in a vacuum and a controlled atmosphere. Adsorption and reduction reactions are established by determining weight variations of the specimen with time. The weighing is done on an electromagnetic scale in which the balance is compensated by electromagnetic forces.

The installation consists of an oven and an automatic recording scale. It was used for the study of the kinetics of the reaction of the thermal reduction of chromium oxide or vanadium oxide with carbon in a vacuum or in an argon atmosphere. Specimens may be heated and sintered in the oven at a temperature of up to 2,000°, and its outstanding feature is the design enabling it to weigh in vacuum or a controlled atmosphere.

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Diagrams of the equipment, the vacuum scale, and the electric circuit are presented. The accuracy of performance depends on the fluctuations of the current supply of the solenoid, the friction of the moving scale parts, and the measurements of the current intensity. The most substantial error is introduced by the potentiometer.

The booklet carries this printer's credit line: Typolithography of the Air Force Engineering Academy imeni Prof N. Ye. Zhukovskiy.

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SAMARIN, A.M.

tions of iron and nickel. V. P. Fiedor[illegible] and A. M. Sa[illegible]

[illegible] Nauk Arch. Hutnic. 1, 18[illegible]

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SAMARIN, A. M.

B

POLAND / Physical Chemistry. Thermodynamics, Thermochemistry, Equilibriums, Phys. Chem. Analysis, Phase Transitions.

Abs Jour: Ref Zhur-Khimiya, No 16, 1958, 52939.

Author : Samarin A. M., Fedotov V. P.
Inst : Not given.
Title : Corrections on the Publication: "On the Solubility of Oxygen in Liquid Nickel and Iron-Nickel Melts."

Orig Pub: Arch. Hutn., 1956, 1, No 4, 367. RZhKhim., 1957, 53928.

Abstract: No abstract.

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SAMARIN, A. M.

Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions. B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29881

Author : Samarin A. M., Kulikov I. S.
Inst : not given
Title : Thermodynamics of Desulfurization of Cast Iron

Orig Pub: Zh. neorgan. khimii, 1956, 1, No 7, 1566-1577

Abstract: From the published values of change in free energy on formation of oxides and sulfides (Δ F) were calculated F and equilibrium constants of the reactions of interaction of BaO (solid), CaO (solid), MnO (liquid) and MgO (solid) with FeS, dissolved in liquid Fe, according to the reaction MO (solid) + FeS = MS (solid) + FeO (liquid), at temperatures of 1135-1750°. In the case of cast iron the effect of the carbon content on the activity of sulfur was taken into account. The temperature dependence of residual sulfur content of cast iron is given for desulfurization by means of pure BaO, CaO and MgO.

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Category: USSR / Physical Chemistry
Thermodynamics. Thermochemistry. Equilibrium. Physico-chemical analysis. Phase transitions. B-8

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29881.

Desulfurization capacity increases with increasing radius of the cathion: under reducing conditions CaO, and especially BaO are effective desulfurization agents, whereas MgO is not; under oxidizing conditions only BaO can be used as a desulfurization agent (residual sulfur content of cast iron is of about 0.04-0.05%). To calculate the desulfurization capacity of slag it is necessary to have data concerning the activity of oxides and sulfides in fused slag. Approximate equations have been derived for the calculation of distribution coefficient of sulfur, between slag and cast iron (L), for slag containing CaO or Mn: $L_{s(CaO)} = -10850/T + 12.575 + 1.72 \lg (a_{(CaO)} + 0.72 \lg [\% S]$ and $L_{s(Mn)} = 10165/T - 4.37 + 1.72 \lg [\% Mn] + 0.72 [\% S]$. The role of Mn in desu,furization of cast iron increases considerably on lowering of the temperature.

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SAMARIN, [illegible]

Oxygen in Steel During the [illegible] (Investigation of [illegible] V. K. [illegible] and A. M. Santarin. [illegible] Nauk SSSR, O.T.N., 1956, No. 1, 106-110). (In Russian). The results of an investigation of changes in the oxygen content of steel during its deoxidation, casting, and rolling [illegible]

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SAMARIN, A.M.

Sulfur activity in silicon-containing iron. R. A. Karasev and A. M. Samarin. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1956, No. 3, 17-23.—The S activity coeff. was [illegible] by S [illegible] from a fused [illegible] [illegible] of H_2S and H_2 was passed through [illegible] to produce the desired S concn. Then Si was added to the fused alloy in an atm. of A or He. The compn. of the alloy [illegible] and after keeping [illegible] the same exposed alloy surface in the last [illegible] was assured by using uniform c.p. Al_2O_3 crucibles to fuse the same amount of Fe (30 g) when measuring the S and Si vaporization rates. The S activity values differ from those obtained by Morris and Williams (*C.A.* 43, 40011) by a factor of almost 2.

W. M. Sternberg

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SAMARIN, A.M.

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18 17 7

The Reduction of Vanadium Oxides by Carbon in a Vacuum. R. A. Karasaev, V. I. Kashin, M. S. Makunin, A. Yu. Polyakov and A. M. Samarin (Izvest. Akad. Nauk S.S.S.R., 1956, [Tekhn.], (4), 94-100). (In Russian). Practically the whole of the trioxide is converted to V by this method. The trioxide and graphite are compacted and sintered in [illegible] The reaction rate increases with temp. and is greatest [illegible] depends also on the vacuum [illegible] reaction products, the rate can be increased [illegible] relationship between the rate of reaction an[illegible] [illegible] depends on [illegible] brittle [illegible] present [illegible] N has [illegible] given % [illegible] effect on the ductility of V, when present [illegible] >0·03% the metal becomes brittle. The great advantage of this method is that the N is usually <0·03%, thus ductile V is produced [illegible]

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SHYTKIN, M.I.

Effects of manganese, chromium, and vanadium on the surface tension of liquid iron. L. P. Kulesnikova and A. M. Samarin. *Izvest. Akad. Nauk S.S.S.R., Otd. Tekh. Nauk* 1956, No. 5, 63-9.—The surface tension of Fe fused with Mn, Cr, and V was detd. by the max.-pressure method in a gas bubble. A relation was discovered among the O content, the surface tension, and nonmetallic inclusions. A relation was found between the changes in surface tension of the melts in the presence of the surface-active FeO, and the amt. and compn. of oxidation reaction products of the metals added to Fe. MnO is assumed to be surface active, whereas a Cr compd. (at least with as much as 2%), and of V with O are substances inactive to the alloys studied.

W. M. Sternberg

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SAMARIN, A. M.

The oxygen solubility in molten nickel and in molten iron + nickel. A. M. Samarin and V. P. Fedotov. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk.* 1956, No. 6, 119-25.—The values for the O soly. in fused Ni and Fe-Ni obtained by Wriedt and Chipman (*C.A.* 49, 5249a) were confirmed. The process is assumed to consist in the O soln. [illegible] the metal and the diffusion of the NiO formed through [illegible] and [illegible] assumption that the heats of soln. of the [illegible] [illegible] higher. A. M. [illegible]

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SAMARIN, A.M.

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4E2c

18 18

Vacuum Melting of Transformer Steel. G. A. Garnyk and A. M. Samarin. (Sta., 1950, (6), 514-518). [in Russian]. Laboratory and semi-production scale experiments are described in which the properties of transformer steel melted in vacuum and in ordinary induction furnaces were compared. The vacuum-melted steel contained less non-metallic inclusions and gases and had better magnetic and electrical properties. The vacuum-melted product could be improved further by selecting conditions for treating the sheets to give large grain-sizes, and by increasing the silicon-content of cold-rolled sheets to over 4%.—S. K.

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SAMARIN, A.M.

Activity of oxygen in liquid iron. W. W. Awerin, A. J. Poljakow, and A. M. Samarin. *Freiberg Forsch* B0 5-27 (1956). —A math. expression is derived for the temp. dependence of the equil. [illegible] in the gas phase indicates that with an increase of the O potential of the gas phase the no. of O atoms per atom of Fe in the oxide is greater. The exptl. results obtained agree well with theory for the soly. of O in liquid Fe and for the dissocn. pressure of liquid $Fe^{II}O$. It has been established that the concn. of H_2O vapor in the gas is largely dependent upon the gas d. as well as the gas vol. The degree of satn. of the gases with H_2O vapor increases with increasing gas d. and the velocity of the gas stream. A method has been developed for detn. of the equil.: liquid metal-gas phase. 15 references.

H. Stoertz

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"APPROVED FOR RELEASE: 08/25/2000 CIA-RDP86-00513R001446920002-3

The effect of manganese on the activity and solubility of oxygen in liquid iron. *cry.* V. Averin, R. A. Karasev, A. Yu. Polyakov, and A. M. Samarin. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1956, No. 11, 52-7; cf. *C.A.* 50, 13689*d*.—The O equil. concn. in Fe-Mn was detd. to permit calcg. the O activity coeff. and the information in literature of the Mn effect on the O soly. in liquid Fe was experimentally tested. Mn was added to fused Fe, and the bath kept at 1600° in an atm. of pure H_2. MnO was nevertheless formed above the fused Fe layer, and this is explained by the high-Mn vapor tension, and its oxidation in the presence of mere traces of O. The high vapor pressure of Mn explains its effectiveness as a deoxidizer above fused steel, the vapors consisting principally of Mn even at Mn concn. not exceeding 0.2%. The behavior of Mn is especially manifested in the interaction with O_2 in the atm. above the liquid metal surface, when not protected with slag, i.e. especially during the splashing of metal above the slag surface during intensive boiling of the metal, as well as during the tapping and pouring of steel. W. M. Sternberg.

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SAMARIN, A. M.

Metal 2

Vacuum-melting transformer steel. G. A. Garnyk and A. M. Samarin. Stal' 16, 514-19(1956).—A comparison of steels melted in an open induction furnace and in one operated under a vacuum of 1-10 mm. Hg from Armco iron and com. FeSi showed that vacuum-melted alloys were better. Watt losses varied between 2.05 and 2.70 w./kg. for open melted and between 1.67 and 1.78 for vacuum melted, both at 15 kilocycles. Hysteresis loops had a smaller area for the latter. O content was 5-10 times lower, and nonmetallic content (by weight) 8 to 10 times lower, the coercive force being about one half of the former. Inclusions in open-melted stock were large globular silicates, in vacuum-melted fine alumina. J. D. Gat

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