DERYABIN, A.A.; POPEL', S.I.; YESIN, O.A.

Effect of the polarization of liquid copper on its interphase tension with slags. Izv.vys.ucheb.zav.; tsvet.met. 8 no.2:32-38 '65. (MIRA 19:1)

1. Kafedra teorii metallurgicheskikh protsessov Ural'skogo politekhnicheskogo instituta. Submitted November 29, 1963.

PAVLOV, V.V.; POPEL', S.I.

Dependence of the surface tension of real solutions on composition and temperature. Zhur. fiz. khim. 39 no. 1:84-186 Ja '65. (MIRA 19:1)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova. Submitted December 19, 1963.

PAVLOV, V.V.; POPEL', S.I.; YESIN, O.A.

Calculation of the surface tension and adsorption of the components on the interface of condensed phases. Zhur. fiz. khim. 39 no. 1:214-218 Ja '65 (MIRA 19:1)

1. Ural'skiy politekhnicheskiy institut. Submitted February 18, 1964.

ACC NR: AR6035412 SOURCE CODE: UR/0137/66/000/009/A011/A011

AUTHOR: Popel', S. I.; Sheratobitov, M. A.; Tsarevskiy, B. V.

TITLE: Determination of the speed of penetration of molten oxides in capillary-porous materials

SOURCE: Ref. zh. Metallurgiya, Abs. 9A70

REF. SOURCE: Sb. Poverkhnostn. yavleniya v rasplavakh i voznikayushchikh iz nikh tverd. fazakh. Nal'chik, 1965, 550-557

TOPIC TAGS: porosity, metal surface impregnation, powder metallurgy, refractory oxide

ABSTRACT: The authors determined the rate of impregnation of pressed samples of powders of fused magnesium by iron-silicate melts at 1220 -- 1420°. For the investigated compositions, the height ℓ of the impregnated part grew with time parabolically, like $\ell^2 = k\tau$, where k is a constant. It is established that k decreases with increasing fraction of SiO_2 in the melt and increases exponentially with increasing temperature. As the grain dimension increases from 0.10 to 0.60 mm, the value of k increases at 1345° from 0.31 to 1.28 cm^2/sec. The influence of the temperature on the rate of impregnation is due to the change in the viscosity and the contact angle. 3 illustrations. Bibliography, 15 titles. D. Kashayeva. [Translation of abstract]

SUB CODE: 20, 11

Card 1/1 UDC: 669.046.587:666.764.1

SHERSTOBITOV, M.A.; POPEL', S.I.; TSAREVSKIY, B.V.

Methods of determining the rate of penetration of melts into capillary porous materials. Poroshk. met. 5 no.8:50-54 Ag '65. (MIRA 18:9)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

SHERSTOBITOV, N.A.; POPEL', S.I.; PAVLOV, V.V.

Kinetic characteristics of coke burning in a layer of a sinter charge mixture. Izv.vys.ucheb.zav.; chern.met. 8 no.8:10-15 '65. (MIRA 18:8)

1. Ural'skiy politekhnicheskiy institut.

PAVLOV, V.V.; POPEL', S.I.

Calculating surface tension and the surface concentration of components in oxide melts. Izv. vys. ucheb. zav.; tsvet. met. 7 no.6:30-37 '64. (MIRA 18:3)

1. Ural'skiy politekhnicheskiy institut, kafedra teorii metallurgicheskikh protsessov.

POPEL', S.I.; DERYABIN, A.A.

Factors affecting the rate of the floating-up of inclusions in steel. Izv.vys.ucheb.zav.; chern. met. 8 no.4:25-29 '65. (MIRA 18:4)

1. Ural'skiy politekhnicheskiy institut.

POPEL', S.I. (Sverdlovsk); SMIRNOV, L.A. (Sverdlovsk); TSAREVSKIY, B.V. (Sverdlovsk); DZHEMILEV, N.K. (Sverdlovsk); PASTUKHOV, A.I. (Sverdlovsk)

Effect of vanadium on the density and surface properties of liquid iron. Izv. AN SSSR. Met. no.1:62-67 Ja-F '65. (MIRA 18:5)

SMIRNOV, L.A.; POPEL', S.I.; PASTUKHOV, A.I.

Effect of vanadium on the density and the surface properties of iron-carbon alloys. Izv.vys.ucheb.zav.; chern. met. 8 no.4: 13-17 '65. (MIRA 18:4)

1. Ural'skiy politekhnicheskiy institut i Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov.

L 45830-65 EWT(m)/EWP(b)/EWP(t) IJP(c) JD

ACCESSION NR: AP5008385 S/0148/65/000/003/0010/0014

AUTHOR: Smirnov, L. A.; Popel', S. I.; Tsarevskiy, B. V.

TITLE: The effect of titanium on the surface properties of iron and iron-carbon alloys

SOURCE: IVUZ. Chernaya metallurgiya, no. 3, 1965, 10-14

TOPIC TAGS: iron alloy, iron-carbon alloy, titanium, surface activity

ABSTRACT: The surface activity of titanium in iron and its alloys was determined using carbonyl iron and iron alloys containing about 3.2% C. The method of stationary drops in a hydrogen atmosphere was used and special precautions were taken to eliminate oxygen. The vacuum furnace temperature was 1550°C during the investigation. With an addition of 2.5 at. % Ti, the surface tension of iron increases from 1735 to 1755 erg/cm^2, which indicates that titanium is not surface-active in iron. In the carbon-iron alloys at 1550°C, surface tension rose from 1615 to 1650 erg/cm^2 with the addition of 2.2 at. % Ti, again revealing the surface inactivity of Ti at the solid-vapor interface just as in pure iron, cobalt and nickel. Titanium adsorption was calculated by the Gibbs equation and found to be negative.

Card 1/2

L 45830-65
ACCESSION NR: AP5008385

2

However, the surface concentrations of titanium in Fe-Ti alloys are noticeably lower than volume concentrations. It was found that wetting of solid aluminum oxide was improved with increased amounts of titanium. At 1550°C and 2.5 at. % Ti, the contact angle reaches 84° for Fe-Ti alloys and 72° for Fe-C-Ti alloys. The reduction in contact angles is caused by the increased adhesion of the melts to the aluminum oxide. At 1350°C, the reduction in contact angles and increased adhesion is much less pronounced. The increase in adhesion of Fe-Ti and Fe-C-Ti melts with titanium concentration is caused by adsorption of titanium on the surface of the oxide and its stronger bond with oxygen as compared with Fe-O and C-O interactions. The presence of 3% carbon in the alloy only slightly decreased the adsorption of titanium. Orig. art. has: 3 figures, 3 tables.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute); Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov (Ural Scientific Research Institute of Ferrous Metals)

SUBMITTED: 14Mar64 ENCL: 00 SUB CODE: MM

NO REF SOV: 008 OTHER: 004

Card 2/2

POPEL', S.I., prof.

Oleg Alekseevich Bain, 1904- ; on his 60th birthday. Zhur. fiz. khim. 38 no.9:2331-2332 S '64. (MIRA 17:12)

PAVLOV, V.V.; POPEL', S.I.

Kinetic characteristics of the C O Co reaction developing at the surface of bubbles of a boiling bath. Izv. vys. ucheb. zav. chern. met 7 no. 6:5-10 '64. (MIRA 17:7)

1. Ural'skiy politekhnicheskiy institut.

PAVLOV, V.V.; POPEL', S.I.; YESIN, O.A. (Sverdlovsk)

Calculation of the surface tension of liquids from the excess isochore-isotherm potential. Part 2. Zhur. fiz. khim. 37 no.4: 797-801 Ap '63. (MIRA 17:7)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova.

DERYABIN, A.A.; POPEL', S.I.

Effect of fluorite on the density and surface tension of molten $CaO-Al_2O_3$ and its adhesion to steel. Izv. vys. ucheb. zav.; chern. met. 7 no.8:5-8 '64. (MIRA 17:9)

1. Ural'skiy politekhnicheskiy institut.

D'YAKONOV, V.I.; [illegible], B.I.

Effect of the time length of holding transformer steel in vacuum and the moment of introducing a deoxidizer on the content of nonmetallic inclusions. Sbor. nauch. trud. Ural. politekh. inst. no.126:18-23 '63 (MIRA 17:8)

POPEL', S.I.; SOKOLOV, V.I.; KORPACHEV, V.G.

Effect of magnesium oxide on the physicochemical properties of iron silicate melts and froth stability. Sbor. nauch. trud. Ural. politekh. inst. no.126:24-33 '63 (MIRA 17:8)

L 6649-65 EWT(m)/EWP(k)/EWP(q)/EWP(t) Pf-4 ESD(gs)/RAEM(t) MJW/JD/HM
ACCESSION NR: AP4044118 S/0148/64/000/008/0005/0008

55
52

AUTHOR: Deryabin, A.A.; Popel', S.I.

TITLE: The influence of fluorspar on the density, surface tension and steel adhesion of CaO-alumina melts

SOURCE: IVUZ. Chernaya metallurgiya, no. 8, 1964, 5-8

TOPIC TAGS: fluorspar, calcium fluoride, CaO alumina melt, flux, flux surface tension, flux density, flux steel adhesion

ABSTRACT: The authors determined the surface tension (σ), density (δ) and adhesion to steel (α) of CaO - Al_2O_3 melts containing up to 32.3% CaF_2, in order to obtain more insight into the factors which play a part in electrosmelting with flux in controlling the gas concentration and nonmetallic impurities during the manufacture of ball-bearing steel. The surface tension was determined from the maximum bubble pressure at the end of a 2-mm capillary tube, the density - from the change in maximum pressure in a 4.5-mm tube submerged to different depths in the melt, and steel adhesion - by x-raying a metal drop under a flux layer. The techniques are described elsewhere. For a 55% CaO 45% Al_2O_3 melt, σ amounted to 530 ergs/cm^2 at 1500C, decreasing sharply when fluorspar

Card 1/3

L 6649-65
ACCESSION NR: AP4044118

3

was substituted for CaO in increasing amounts, to drop to 310 ergs/cm^2 at 28 wt% CaF_2 in the melt, ∂ decreased from 3.2 to 2.9 g/cm^3 as the CaF_2 content reached 28%, for an original melt with 55% CaO and 45% Al_2O_3 and ShKh15 steel (as shown in the Enclosure), σ dropped from 1000 to 850 ergs/cm^2 when 12 mol. % CaF_2 was substituted for CaO. CaF_2 substitution, however, had no noticeable effect on the flux-gas interphase tension. Orig. art. has: 2 tables and 1 figure.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: 31Jan63 ENCL: 01 SUB CODE: MM, MT

NO REF SOV: 013 OTHER: 001

Card 2/3

L 6649-65
ACCESSION NR: AP4044118

ENCLOSURE: 01

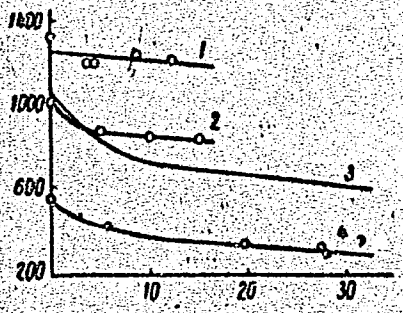


Fig. 1. Effect of fluorspar on the surface tension of $CaO-Al_2O_3$ melts at the boundary with gas and with ShKh15 steel: 1 - steel-flux interphase tension; 2 - flux-steel adhesion; 3 - flux cohesion; 4 - flux surface tension. Ordinate = surface tension in $ergs/cm^2$; abscisa = CaF_2 in mol. %.

Card 3/3

POPEL', S. I.; PAVLOV, V. V.

Rate limiting reaction in a converter bath. Izv. vys. ucheb. zav.; chern met. 7 no. 4:5-10 '64. (MIRA 17:5)

1. Ural'skiy politekhnicheskiy institut.

POPEL', S. I.; PAVLOV, V. V.; YESIN, O. A.

Calculation of the surface tension of liquids by means of the excess isochore-isotherm potential. Part 1. Zhur. fiz. khim. 37 no. 3:622-627 Mr '63. (MIRA 17:5)

1. Ural'skiy politekhnicheksiy institut imeni Kirova, Sverdlovsk.

DERYABIN, A. A.; POPEL', S. I.

Adhesion of ShKh15 steel to slags containing sodium oxide. Izv. vys.ucheb.zav.; chern.met.7 no. 5:26-27 '64. (MIRA 17:5)

1. Ural'skiy politekhnicheskiy institut.

POPEL', S.I. (Sverdlovsk); PAVLOV, V.V. (Sverdlovsk)

Effect of the surface activity of components dissolved in iron on the consecutiveness of their oxidation. Izv. AN SSSR. Met. i gor. delo no.5:42-49 S-O '63. (MIRA 16:11)

TSAREVSKIY, B.V.; POPEL', S.I.

Steel adhesion to various refractory materials. Izv. vys. ucheb. zav.; chern. met. 6 no.12:9-13 '63. (MIRA 17:1)

1. Ural'skiy politekhnicheskiy institut.

POPEL', S.I.; DERYABIN, A.A.; YESIN, O.A.

Surface properties of oxide systems composing the deoxidation products of ball bearing steel. Izv. vys. ucheb. zav.; chern. met. 6 no.12:5-8 '63. (MIRA 17:1)

ORLYANSKIY, Ya.G.; TSAREVSKIY, B.V.; POPEL' S.I.

Effect of deoxidizers on the suface finish of carbon steel castings. Lit. proizv. no.10:4-5 O '63. (MIRA 16:12)

POPEL', S.I.; DERYABIN, A.A.

Surface tension of ShKh15 ball-bearing steel and its adhesion to slag. Izv. vys. ucheb. zav.; chern. met. 6 no.9:16-19 '63. (MIRA 16:11)

1. Ural'skiy politekhnicheskiy institut.

POPEL', S.I.; YESIN, O.A.; DZHEMILEV, N.K.

Adhesion of carbon iron alloys to slags. Izv. vys. ucheb. zav.; chern. met. 6 no.6:5-10 '63. (MIRA 16:8)

1. Ural'skiy politekhnicheskiy institut.
(Iron alloys) (Surface tension)

YESIN, O.A.; GEL'D, P.V.; POPEL', S.I.; NIKITIN, Yu.P.

Review of "Physical chemistry" by A.A. Zhukhovitskii and L.A. Shvartsman. Zhur. fiz. khim. 37 no.6:1435-1436 Je '63. (MIRA 16:7)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova.
(Zhukhovitskii, A.A.) (Shvartsman, L.A.)
(Chemistry, Physical and theoretical)

L 16918-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD

S/076/63/037/004/008/029

AUTHOR: Pavlov, V. V., Popel', S. I., Yesin, O. A.

TITLE: Calculation of the surface tension of liquids from the excess isochore-isotherm potential. II. Molten salts and metals

PERIODICAL: Zhurnal fizicheskoy khimii, V. 37, No. 4, 1963, 797-801

TEXT: With the use of the excess isochore-isotherm potential an equation is derived which correlates the surface temperature of ionic liquids with the temperature, volume, and saturated vapor pressure. Thus

$$\sigma = 0.157\,(1 + 8\beta)T\,\frac{4.58 + \lg\,(T/V) - \lg P}{V_{liq}^{2/3}}\,. \qquad (7)$$

Here T is the temperature; V is the volume; and P is the saturated vapor pressure. The values for σ and $d\sigma/dt$ calculated for molten salts are in satisfactory agreement with the experimental data. An equation derived earlier for molecular liquids can be applied to estimate the surface tension of metals which have a simple cubic structure. The equation is

Card 1/2

L 16918-63 S/076/63/037/004/008/029

Calculation of the surface tension of liquids from ...

$$\sigma = 1/6 \frac{RT \left[\ln (RT/PV_{liq}) - 1\right]}{N_0^{1/3} V_{liq}^{2/3}} . \qquad (9)$$

N_0 is the number of non-interacting particles. RT is the change of the mole isochore potential. Satisfactory agreement between calculated and experimental data also occurs here. There are 2 tables.

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S. M. Kirova (Ural Polytechnical Institute imeni S. M. Kirov), Sverdlovsk

SUBMITTED: March 12, 1962

Card 2/2

KORPACHEV, V.G.; YESIN, O.A.; POPEL', S.I.

Evaluating the composition of surface layers in oxide melts. Izv. vys.ucheb.zav.; chern.met. 6 no.1:5-7 '63. (MIRA 16:2)

1. Ural'skiy politekhnicheskiy institut.
(Surface tension) (Metallic oxides)

TSAREVSKIY, B. V. (Sverdlovsk); POPEL', S. I. (Sverdlovsk);
LAZAREV, L. L. (Sverdlovsk)

Penetration of iron alloys into packed sand. Izv. AN SSSR. Otd. tekh. nauk. Met. i topl. no.6:49-54 N-D '62. (MIRA 16:1)

(Porous materials) (Liquid metals)

PERMINOV, A.A.; POPEL', S.I.; SMIRNOV, N.S.

Adhesion of simple boron enamels to low-carbon steel. Izv.vys. ucheb.zav.; chern.met. 5 no.11:150-155 '62. (MIRA 15:12)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov i Ural'skiy politekhnicheskiy institut.
(Enamel and enameling) (Steel—Analysis) (Surface chemistry)

POPEL', S.I.; DERYABIN, A.A.; KONOVALOV, G.F.

Effect of sodium oxide on the tension of a silicate melt at the boundary between gas and metal. Izv. vys. ucheb. zav.; chern. met. 5 no.8:5-8 '62. (MIRA 15:9)

1. Ural'skiy politekhnicheskiy institut.
(Flux (Metallurgy)) (Surface tension)

S/148/63/000/001/001/019
E039/E151

AUTHORS: Korpachev, V.G., Yesin, O.A., and Popel', S.I.

TITLE: The composition of surface layers in molten iron containing oxides

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, no.1, 1963, 5-7

TEXT: As was previously found for the system FeO-Fe_2O_3, the surface of liquid melts can apparently remain heterogeneous even on superheating up to 200 °C above the liquidus. To examine the differences in composition between the surface layer and body of the melt, X-ray examinations were made of specimens taken from the top surface of a solidified cylinder (surface specimens) and from the centre of the cylinder (central specimens) using rotating polished specimens and Fe-K_α, β radiation. The results for a melt containing 11% Fe_2O_3 and 89% Fe (in iron crucible) showed that the central specimen gave only wüstite lines and weak magnetite lines, but the surface specimen showed only Fe_2O_3 and Fe_3O_4 lines. Similar results were obtained for the same melt, using a magnesia crucible either in vacuo or under argon. Similar investigations

Card 1/2

The composition of surface ... S/148/63/000/001/001/019
E039/E151

were carried out for the following systems: 1) 70.1% FeO + 4.8% Fe_2O_3 + 25.1% SiO_2; 2) 64% FeO + 26.7% Fe_2O_3 + 9.3% CaO; 3) 59.1% FeO + 7.6% Fe_2O_3 + 22.3% SiO_2 + 11.0% MgO; 4) 78.8% FeO + 11.5% Fe_2O_3 + 9.7% Na_2O. The central specimen of system (1) showed lines close to those of fayalite, and the surface specimen an increased concentration of Fe_2O_3. Similar results were obtained for systems (2) and (3). Surface specimen of system (4) had Fe_2O_3, Fe_3O_4, $Na_2Fe_2O_4$ and FeO lines. Conclusion: the heterogeneity of surface layers in the systems studied is caused by increased concentration of Fe_2O_3. The introduction of sodium oxide into the melt causes some homogenisation of the surface layer and the body. There is 1 figure.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
(Ural Polytechnical Institute)

SUBMITTED: October 23, 1962

Card 2/2

KONOVALOV, G.F.; POPEL', S.I.

Interphase tension at the boundary of steel, slag, and products of their deoxidation. Trudy Ural. politekh. inst. no.93:73-79 '59. (MIRA 15:3)

(Steel--Metallography) (Surface chemistry)

KORPACHEV, V.G.; POPEL', S.I.

Viscosity of FeO - MnO - SiO_2 melts. Trudy Ural. politekh. inst. no.93:64-72 '59. (MIRA 15:3)
(Iron-manganese-silicon alloys--Thermal properties)
(Viscosimetry)

S/180/62/000/006/003/022
E071/E151

AUTHORS: Tsarevskiy, B.V., Popel', S.I., and Lazarev, L.L. (Sverdlovsk)

TITLE: The penetration of iron alloys into packed sand

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no.6, 1962, 49-54

TEXT: The pressure (p_k) at which cast iron, steel and Fe-C-Si penetrate into pores between rounded grains of quartz sand of known size distribution was determined. Using the determined values of p_k, σ (surface tension of the alloys) and θ (wetting angle), the effective mean radius of the pores was calculated. The experimental procedure and apparatus used are described in some detail. Sand specimens (20.2 mm diameter, 23 mm in height) were made by compression under a standard load (3.5 kg) of mixtures of washed quartz sand with 4% of bentonite and 5% of water and subsequent drying at 200 °C. The reproducibility of the results was about 10%. The mean radius of pores for a majority of sand fractions tested was found to be 0.31 - 0.41 of the radius of

Card 1/2

sand grains. With increasing temperature from 1380 °C the penetration pressure of an iron alloy containing 4.6% carbon showed a slight local decrease at about 1615 °C and then followed a sharp increase on approaching 1700 °C. These changes are related to the surface melting of sand grains and their subsequent sintering. With increasing concentration of carbon and silicon in iron the penetration pressure decreases comparatively uniformly from 338 to 250 mm Hg (at 4.6% C) or to 264 mm Hg (at 3.6% Si). Sulphur causes a more marked decrease in the penetration pressure. Increasing the sulphur concentration from 0.004 to 0.136% causes the value of p_k to decrease from 245 to 107 mm Hg.
There are 4 figures and 3 tables.

SUBMITTED: April 10, 1962

POPEL', S.I.

Intensity of the occurrence and growth of nonmetallic inclusions in steel. Izv.vys.ucheb.zav.; chern.met. 5 no.4:5-13 '62. (MIRA 15:5)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Inclusions)

PERMINOV, A.A.; POPEL', S.I.; SMIRNOV, N.S.

Adhesion of simplest silicate melts to oxidized and unoxidized steels. Zhur.prikl.khim. 35 no.2:271-275 F '62. (MIRA 15:2)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov i Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.
(Silicates) (Metallic oxides) (Adhesion)

KORPACHEV, V.G.; YESIN, O.A.; POPEL', S.I.

Effect of iron oxides on the viscosity, surface tension, and density of commercial sodium silicate. Izv. vys. ucheb. zav.; chern. met. 5 no.3:24-29 '62. (MIRA 15:5)

1. Ural'skiy politekhnicheskiy institut.
(Iron oxides) (Sodium silicate)

YESIN, O.A.; POPEL, S.I.; CHUCHMAREV, S.K.

Sulfur removal from slag by electrolysis. Izv.vys.ucheb.zav.:\
chern.met. no.3:5-9 '60. (MIRA 13:4)

1. Ural'skiy politekhnicheskiy institut.
(Slag) (Desulfuration)

PERMINOV, A.A.; POPEL', S.I.; SMIRNOV, N.S.

Effect of replacing sodium oxide by oxides of other metals on the surface tension of silicate melts and their adhesion to solid steel. Izv. vys. ucheb. zav.; chern. met. 4 no.12:5-7 '61. (MIRA 15:1)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov i Ural'skiy politekhnicheskiy institut.
(Silicates) (Surface tension)

KORPACHEV, V.G.; POPEL', S.I.; YESIN, O.A.

Surface and volume viscosity of the simplest ferrous slags.
Izv. vys. ucheb. zav.; chern met. 5 no.1:41-47 '62.
(MIRA 15:2)

1. Ural'skiy politekhnicheskiy institut.
(Slag)
(Viscosity)

S/081/62/000/008/013/057
B166/B101

AUTHORS: Tsarevskiy, B. V., Popel', S. I.

TITLE: The adhesion of liquid iron and ferroalloys to solid oxides

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 8, 1962, 72, abstract 8B516 (Sb. "Fiz.-khim. osnovy proiz-va stali". M., AN SSSR, 1961, 97-105)

TEXT: The surface tension σ and the contact angles θ of iron alloyed with O_2, C and Si on oxide backings were determined simultaneously. The results obtained are used to calculate the adhesion of liquid iron to solid oxides. The σ of the iron studied amounts to 1710 ergs/cm^2, the θ on a plate made from Al_2O_3 are 141°, and the adhesion is 380 ergs/cm^2. It is established that C and Si have a slight influence on σ and θ. Increasing the concentration of C to 4.1 % and Si to 5.1 % reduces the magnitude of σ to 1625 ergs/cm^2 and θ decrease by 8÷15°. High capillary activity of O_2 in iron on its interface with a gas and with solid aluminum oxide is

Card 1/2

The adhesion of liquid iron...

confirmed. It is established that the adhesion of iron-carbon and iron-silicon alloys to solid oxides is small, amounting to 12-20 % of the cohesion of the metal and decreasing smoothly with increase in the C and Si content. The introduction of O_2 into iron gives an extremely sharp increase in adhesion. With a concentration of 0.076 % O_2 the adhesion reaches 1235 ergs/cm^2. It is confirmed that a more intense reduction in σ results from the introduction of C and Si into commercially pure iron. This intensification is apparently brought about by the high concentration of sulfur, whose activity is increased by the introduction of C and Si. The adhesion of the commercial alloys to oxides is higher than that of pure iron. [Abstracter's note: Complete translation.]

Card 2/2

PERMINOV, A.A.; POPEL', S.I.; SMIRNOV, N.S.

Surface tension of melts and their adhesion to low-carbon steel.
Izv. vys. uchet. zav.; chern. met. 4 no.8:5-8 '61. (MIRA 14:9)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov i Ural'skiy politekhnicheskiy institut.
(Surface tension) (Oxides) (Steel)

GOL'DSHTEYN, Nison L'vovich; VOSKOBOYNIKOV, V.G., prof., doktor tekhn. nauk, retsenzent; NEKRASOV, N.K., dots., kand. tekhn. nauk, retsenzent; VATOLIN, N.A., kand. tekhn. nauk, retsenzent; LEPINSKIKH, B.M., retsenzent; POPEL', S.I., prof. doktor tekhn. nauk, red.; BUR'KOV, M.M., red. izd-va; TURKINA, Ye.D., tekhn. red.

[Short course on the theory of metallurgical processes] Kratkii kurs teorii metallurgicheskikh protsessov. Sverdlovsk, Gos. nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 334 p. (MIRA 15:2)

(Metallurgy)

S/148/61/000/012/001/009
E040/E435

AUTHORS: Perminov, A.A., Popel', S.I., Smirnov, N.S.

TITLE: Effect of substituting sodium oxide by the oxides of other metals on the surface tension of silicate melts and their adhesion to solid steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no.12, 1961, 5-7

TEXT: A study was made of the effect of replacing 20 mol % sodium oxide by the oxides of Li, K, Mg, Ca, Sr, Ba, Mn, Fe, Ti and B in silicate enamels (64% SiO_2, 36% Na_2O) for steel containing 0.084% C, 0.04% Si, 0.038% Mn, 0.037% S, 0.028% P, 0.14% Cr, 0.046% Ni, 0.002% Al and 0.09% Cu impurities. The tests were made at the temperature of 1100°C, the adhesion of the enamel being evaluated in terms of the surface tension and contact angle of the molten enamel. The highest increase in the energy of the interparticle bonds in the melt (cohesion) and the highest strength of adhesion to metal was found for the addition of 20% of Fe_2O_3 when the adhesive strength rose from 465 erg/cm^2 (starting silicate melt) to 625 erg/cm^2. The effect of other oxides is much less pronounced, MnO, BaO and SrO producing some

improvement in the adhesion and B_2O_3 even reducing it. The oxides of Li, K, Mg, Ca and Ti have no significant effect on the adhesion of silicate enamels to low carbon steel surfaces. There are 1 table and 10 references: 9 Soviet-bloc and 1 non-Soviet-bloc. The reference to an English language publication reads as follows: Ref.10: B.W.King, H.P.Tripp, W.H.Duckworth. J. Amer. Ceramic Society, v.42, no.11, 1959, 6-26.

ASSOCIATIONS: Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov i Ural'skiy politekhnicheskiy institut (Ural Scientific Research Institute of Ferrous Metals and Ural Polytechnical Institute)

SUBMITTED: December 25, 1960

POPEL', S.I.

115

PHASE I BOOK EXPLOITATION SOV/5411

Konferentsiya po fiziko-khimicheskim osnovam proizvodstva stali. 5th, Moscow, 1959.

Fiziko-khimicheskiye osnovy proizvodstva stali; trudy konferentsii (Physicochemical Bases of Steel Making; Transactions of the Fifth Conference on the Physicochemical Bases of Steelmaking) Moscow, Metallurgizdat, 1961. 512 p. Errata slip inserted. 3,700 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut metallurgii imeni A. A. Baykova.

Responsible Ed.: A. M. Samarin, Corresponding Member, Academy of Sciences USSR; Ed. of Publishing House: Ya. D. Rozentsveyg. Tech. Ed.: V. V. Mikhaylova.

Card 1/16

Physicochemical Bases of (Cont.) SOV/5411

PURPOSE: This collection of articles is intended for engineers and technicians of metallurgical and machine-building plants, senior students of schools of higher education, staff members of design bureaus and planning institutes, and scientific research workers.

COVERAGE: The collection contains reports presented at the fifth annual convention devoted to the review of the physicochemical bases of the steelmaking process. These reports deal with problems of the mechanism and kinetics of reactions taking place in the molten metal in steelmaking furnaces. The following are also discussed: problems involved in the production of alloyed steel, the structure of the ingot, the mechanism of solidification, and the converter steelmaking process. The articles contain conclusions drawn from the results of experimental studies, and are accompanied by references of which most are Soviet.

PART III. NONMETALLIC INCLUSIONS AND THE PROPERTIES OF STEEL

23617
S/148/60/000/012/002/020
A161/A133

18.8100 1418, 1454, 1045

AUTHORS: Tsarevskiy, B. V., and Popel', S. I.

TITLE: The effect of alloying elements on the surface properties of iron

PERIODICAL: Izvestiya vysshikh uchebnukh zavedeniy. Chernaya metallurgiya, no. 12, 1960, 12 - 16

TEXT: The data existing in literature are contradictory. The purpose of the described investigation was the simultaneous measurement of the surface tension and the angle of contact and an evaluation of the adhesion of iron alloys in liquid state to aluminum oxide by the obtained σ and θ values The test equipment and techniques had been described previously by B. V. Tsarevskiy, S. I. Popel' (Ref. 10: Izv. vyssh. uch. zav. Chern. metallurgiya, 1960, no. 8) in connection with a study of the surface properties of Fe-C alloys. The σ and θ at 1,560°C were determined by the "method of immobile drop", in argon. Carbonyl iron purified from C and O was used for solvent; alloys were prepared with high-purity Si and electrolytic Ni, Mn and Cr, the latter in the form of preliminarily prepared alloy with 26.7%

Card 1/6

The effect of alloying elements on the...

Cr. The alloying elements were held in hot dried hydrogen and subsequently degassed in the vacuum at 800°C. The backings were made of Al_2O_3. The density values of iron and the most part of alloys were determined using the handbook of G. Mellor (Ref. 11: Comprehensive Treatise of Inorganic and Theoretical Chemistry, 14, 2. 1934) and extrapolation; the density of nickel by data of P. Kozakevitch, G. Urbain (Ref. 5: Journal of Iron and Steel Inst., 186, 2, 167, 1957); the surface tension by the graphs in the work of S. I. Popel', N. N. Krasnovskiy, O. A. Yesin, Yu. P. Nikitin (Ref. 12: Trudy Ural'skogo politekhnicheskogo instituta, sb. 49, 76, Metallurgizdat, 1954). The determination error of σ was 5%, and of θ ±3°. The results are given in a table and 3 graphs (Fig. 1, 2 and 3). Increase of Si content to 5.1% (weight) in iron caused σ decrease to 1,615 erg/cm^2; Mn reduced the surface tension even more, and σ in alloy with 12.2% Mn was only 1,365 erg/cm^2; Ni increases the surface tension, to 1,790 erg/cm^2 at 19.8% content; pure nickel had σ = 1,810 erg/cm^2. The ratio of σ to the Ni-content was expressed by a straight line (Fig. 2, curve 1); Cr content to 27% reduced σ to 1,600 erg/cm^2 (Fig. 2, curve 2). The much higher effect of Ni and Cr on σ may be due to the content of capillary-active impurities in other in-

The effect of alloying elements on the...

vestigations, particularly of S. Oxygen which proved to have the highest effect - 0.076% O caused σ drop in Fe-O to 1,235 erg/cm^2 (Fig. 3), and these results are close to already available data. It was evident that an addition of Si, Ni, Cr and C changed the bond forces insignificantly - at 10% (at) Si or 12% (at) Cr the cohesion dropped 5%, and at 12% (at) Mn the drop exceeded 20%. It is not excluded that the effect of Mn will be lower in complete absence of oxygen and sulfur. The higher cohesion of melts containing Mn or O with oxide surfaces obviously makes the liberation of solid inclusions from metal into slag more difficult. It seems to be one of the reasons for the sticking of manganese steel and oxidated low-carbon steel to refractories. Conclusions: The adhesion of iron alloys to solid aluminum oxide is not high in systems Fe-Si, Fe-Ni, and Fe-Cr, and amounts to 7 - 20% of the iron cohesion. It raises with raising Si and Ni content and drops when Cr is added. Addition of Mn and oxygen into iron increases the adhesion, and at 12% Mn or 0.076% O it equals 1,065 and 1,235 erg/cm^2, respectively. There is 1 table, 3 figures and 14 references: 9 Soviet-bloc and 5 non-Soviet-bloc. The four references to English-language publications read as follows: P. Kozakevich, G. Urbain. J. of Iron and Steel Inst., 186, 2, 167, 1957; F. A. Halden, W. D. Kingery. J. of Physical Chemistry, 59,

Card 3/6

23617

S/148/60/000/012/002/020
A161/A133

The effect of alloying elements on the...

577, 1955; G. Mellor (mentioned in text), 1934; Kengery, J. Amer. Ceramic Soc. 37, 2, 42, 1954.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: April 28, 1960

Card 4/6

POPEL, S. I., TSAREVSKIY, B. V., and CHE[illegible]LIN, V. A.

"An Investigation of the Physical-Chemical Interaction of Alloys with Molding Materials"

report presented at the 7th Conference on the Interaction of the Casting Mould and the Casting, sponsored by the Inst. of Mechanical Engineering, Acad. Sci. USSR, 25-28 January 1961.

TSAREVSKIY, B.V.; POPEL', S.I.

Surface properties of iron-carbon alloys. Izv. vys. ucheb. zav.; chern. met. no.8:15-21 '60. (MIRA 13:9)

1. Ural'skiy politekhnicheskiy institut.
(Iron alloys) (Surface tension)

POPEL', S.I., dotsent, kand.tekhn.nauk

Foaming of steel-smelting slags. Trudy Ural. politekh.inst. no.91: 28-36 '60. (MIRA 14:2)
(Steel--Metallurgy) (Slag)

S/148/60/000/011/001/015
A161/A030

AUTHORS: Yesin, O. A.; Pastukhov, A. I.; Popel', S. I.; Dzemyan, S.K.

TITLE: Desulfuration of steel and slag with the electric current in an arc furnace

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 11, 1960, 20 - 26

TEXT: It was stated in several previous investigations that sulfur reduction from iron and steel can be speeded up by direct current when liquid metal is the cathode. Information is given on experiments with D.C. and A.C. in a 500-kg three-phase arc furnace normally working with 1500 amp. A.C. from a 400 kva transformer. The transformer was connected by means of switches to a mercury rectifier to produce 1500 - 2000 amp D.C. Slag was deoxidized with 2 - 2.5 kg ferrosilicon and 1 kg coke, and liquefied with fluorspar or with sodium silicate. Liquefiers, and particularly fluorspar, raised the desulfuration rate considerably. Evaporation of S was observed along with electrolysis by D.C. as well as A.C., which shows that

Card 1/4

Desulfuration of steel and slag ....

S elimination is possible through the irradiation with electrons and photons from the arc. A perceptible FeO content in slag and slowed desulfuration was observed at C below 0.27 %, and a regular increase of desulfuration rate with increased initial S content, which appears to be due to the S content in the layer at the electrode and on the slag surface. The slag layer depth had a considerable effect. It had been stated in previous work (Ref. 7: Yesin, Popel' and Chuchmarev, Izv. vyssh. uch. zav. Chern. metallurgiya, 1960, No. 3, 5) that electrochemical S elimination into gas takes place when alternating current passes through the slag, and the process goes on the electrode which is the anode at the moment; the S elimination is relatively intense also when A.C. is brought into the slag by arcs. To compare the effect of D.C. and A.C., one electrode in the A.C. process was submerged into the slag, and the two other electrodes closed the circuit with the arcs. Desulfuration in this case was slightly lower with A.C. than with D.C. In two heats electrodes were not submerged and three A.C. arcs burned; C content in metal was about 1 %, and fluorspar was used for the slag liquefier. The result was a lower S content in the metal and slag, and the final S content in the metal was 0.003% (or 12 % of the initial S content). The desulfuration rate was practically equal with the three A.C. arcs with 1500

S/148/60/000/011/001/015
A161/A030

Desulfuration of steel and slag ....

There are 3 figures and 9 Soviet and 2 non-Soviet references; the reference to the English-language publication reads as follows: (Ref. 10) R. E. Boni, G. Derge, Journal of Metals, 8, 59, 1956.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: April 19, 1960

Card 4/4

S/148/60/000/008/013/018/XX
A161/A029

AUTHORS: Tsarevskiy, B.V.; Popel', S.I.

TITLE: Surface Properties of Iron-Carbon Alloys

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. - Chernaya metallurgiya, 1960, No. 8, pp. 15 - 21

TEXT: The existing data on the surface tension of iron-carbon alloys being different and contradictory (Refs. 1,2,7), the described investigation has been carried out to obtain more accurate data on the effect of carbon on surface tension of iron and to determine the wettability of aluminum oxide and molten magnesia by iron-carbon alloys. The value of surface tension and contact angles was used as a criterion of adhesion in the liquid and solid phase. The "immobile drop method" was employed for simultaneous determination of surface tension and contact angles. The experimental installation is briefly described and shown in a diagram (Fig. 2). Fe-C alloy was placed into a corundese tube ("2") inserted into a corundum tube ("3") and with it into the carbon tube of the installation furnace, with a slight incline; the tube with the sample was rinsed with pure argon before switching on the furnace and brought into horizontal position when the sample became brightly luminescent at 1,100 - 1,200°C to make the drop (Figs.

Surface Properties of Iron-Carbon Alloys

2, "4") symmetrical and prevent flowing. The drop was heated to 1,560°C, held for 12 - 15 min and photographed on supercontrast diapositive plates. The following facts have been observed. 1) With a C content increase to 4.1% at 1,560°C and 0.004% S, the effect of C on the surface tension of iron drops from 1,710 to 1,620 erg/cm^2; saturation of the surface layer with C is not reached at a 3% C content. 2) Addition of C produces a more intensive drop of the surface tension in alloys containing 0.026 - 0.03% S. This is caused by additional adsorption of sulfur, the activity of which grows with growing carbon content. 3) With the carbon content in pure carbonyl iron raised to 4.1%, the contact angles on a lining of aluminum oxide are reduced from 141 to 132°. 4) With the carbon content in pure iron raised to 4.1%, its adhesion to aluminum oxide increases from 380 to 540 erg/cm^2. The adhesion of commercial iron to molten magnesia is of 660 erg/cm^2; at 3.15% C it increases to 890 erg/cm^2. There are 4 figures, 2 tables and 13 references: 10 Soviet, 2 English and 1 French.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: March 7, 1960

Surface Properties of Iron-Carbon Alloys

Figure 2:

Diagram of the Installation for Determining the Surface Tension and the Contact Angles.

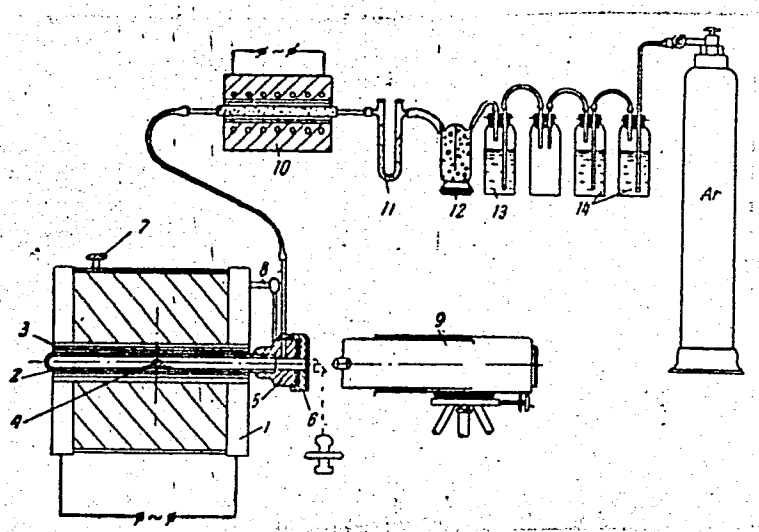


Fig. 2.

Card 3/3

S/133/60/000/004/001/010
A054/A026

AUTHORS: Kovyryalov, I.P., Engineer; Popel', S.I., Candidate of Technical Sciences; Konovalov, G.F., Engineer; Polzunov, A.M., Engineer

TITLE: The Effect of Deoxidation of Steel and its Treatment by Sodium Silicate on the Percentage of Non-Metallic Inclusions

PERIODICAL: Stal', 1960, No. 4, pp. 305 - 307

TEXT: At the Severskiy metallurgicheskiy zavod (Seversk Metallurgical Plant) the effect of deoxidation by ferromanganese and ferrosilicon, as well as the effect of a treatment with sodium silicate and a sand-scale mixture on the steel in the furnace were investigated. The steel tested had the following composition: C: 0.13 - 0.16%; Mn: 0.30 - 0.40%; Si: $\leqslant$ 0.03%; P: $\leqslant$ 0.050%; S: $\leqslant$ 0.055%. Melting was carried out according to the scrap process, in a basic, black oil fired Siemens-Martin open-hearth furnace. To deoxidation ferromanganese and an addition of blast-furnace ferrosilicon were applied, while for the slagging of floating inclusions on the surface of the molten metal a sand-scale mixture (65%: 35%) was dispersed. The percentage of inclusions in the metal varied between 0.03 - 0.07% and of this

Card 1/4

The Effect of Deoxidation of Steel and its Treatment by Sodium Silicate on the Percentage of Non-Metallic Inclusions

percentage the high-melting components (corundum, spinel) were 70 - 90%, deteriorating the quality of steel. The analysis of the test showed that upon adding ferrosilicon the percentage of high-melting inclusions decreased by about 20 - 30%, whereas that of the silicate inclusions increased by about 30 - 50%, while the grain size of the glasslike inclusions also increased (up to 0.3 - 0.5 mm^2 and more). Thus, under the influence of deoxidation with ferromanganese and ferrosilicon the high-melting components could be slagged more efficiently. Tochinskiy and Perren (Ref. 6) applied low-melting silicates to the removal of inclusions and impurities from the steel. In the process described in the present paper low-melting sodium silicate powder (24.1% Na_2O and 62.8% SiO_2) was applied as fluxing agent which easily forms drops on account of its low surface tension at the gas zone (300 erg/cm^2). Sodium silicate was a) either sprinkled on the metal surface in the ingot mold or b) it was added partly to the metal when tapped from the furnace, partly to the ladle when one third full and finally it was also put into the ingot mold. In both test

S/133/60/000/004/001/010
A054/A026

The Effect of Deoxidation of Steel and its Treatment by Sodium Silicate on the Percentage of Non-Metallic Inclusions

series the metal was reduced in the furnace by ferromanganese only. 300 g of a mixture of 65% of sand and 35% of scale was added to one part of the ingot molds, whereas an equal amount of sodium silicate to the other ingot molds. In the slag samples taken from the castings treated without fluxing agents, 30 - 40% spinel, 15% ferric oxide, 10% silicate glass and up to 40% manganese orthosilicate were found. Table 1 shows that when adding sodium silicate to the ladle and to the ingot mold the total amount of inclusions is not affected, but their chemical composition is changed. SiO_2 increased from 10 - 15% up to 48%, whereas the content of the high-melting components (manganese oxide and in many cases ferro-oxide content) decreased, sometimes magnesium and chrome oxide were even completely lacking. The amount of waste products was also reduced by this process. When milling strips from 139 tons of casting treated by sodium silicate, the waste products amounted to 1,329 kg, whereas the corresponding figure from an equal amount of castings treated by sand-scale mixture was 2,125 kg. The plastic properties of the steel also improved (relative elongation increased from 31.8 to 33.2%)

Card 3/4

POPEL', S.I., kand.tekhn.nauk, dots.; KONOVALOV, G.F., inzh.

Interfacial tension in low-carbon steel at boundaries with oxidation products. Izv.vys.ucheb.zav.; chern.met. 2 no.8: 3-7 Ag '59. (MIRA 13:4)

1. Ural'skiy politekhnicheskiy institut i Severskiy metallurgicheskiy zavod. Rekomendovano kafedroy teorii metallurgicheskikh protsessov Ural'skogo politekhnicheskogo instituta.

(Steel--Metallurgy) (Surface chemistry)

ACCESSION NR: AP4034567 S/0079/64/034/004/1111/1113

AUTHOR: Popelava, O. S.; Andrianov, K. A.; Laricnova, A. A.; Golubtsov, S. A.

TITLE: Thermal condensation of dimethylchlorosilane with certain organic chloro-derivatives.

SOURCE: Zhurnal obshchey khimii, v. 34, no. 4, 1964, 1111-1113

TOPIC TAGS: dimethylchlorosilane, thermal condensation, dimethylvinylchlorosilane, dimethylallylchlorosilane, β chlorovinyldimethylchlorosilane, bis dimethylchlorosilyl ethylene, p chlorophenyldimethylchlorosilane, disproportionation, monofunctional derivative, polyfunctional derivative, distillation, purification, etherification

ABSTRACT: This is a continuation of earlier investigations of the thermal condensation of chlorosilanes with different chloro-organic compounds. In this investigation the thermal condensation (at 500-550 C) of chloroorganics with dimethylchlorosilane were studied:

$$(CH_3)_2SiHCl + RCl \rightarrow (CH_3)_2RSiCl + HCl.$$
$$R = CH_2{=}CH,\ CH_2{=}CHCH_2,\ ClCH{=}CH,\ ClC_6H_4$$

Card 1/2

L 22441-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM
ACCESSION NR: AP5000484 S/0062/64/000/011/2068/2069 31 B

AUTHOR: Belyakova, Z. V.; Pomerantseva, M. G.; Andrianov, K. A.; Golubtsov, S. A.; Popeleva, G. S.

TITLE: Obtaining γ-trifluoropropylalkenylchlorosilanes and their interaction with hydride chlorosilanes

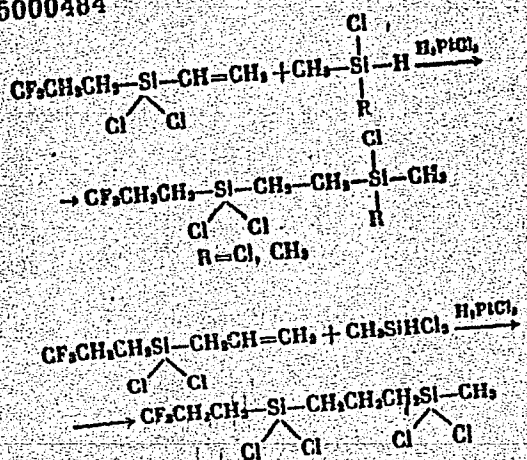
SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1964, 2068-2069

TOPIC TAGS: Grignard addition reaction, gamma trifluoropropylalkenylchlorosilane, methyldichlorosilane, dimethylchlorosilane, gamma trifluoropropyldivinyldichlorosilane

ABSTRACT: The vinyl and allyl title compounds were prepared by Grignard addition reaction of methyldichlorosilane or dimethylchlorosilane with γ-trifluoropropyldivinyldichlorosilane in accordance with the following formulas:

Card 1/3

L 22441-65
ACCESSION NR: AP5000484



The yields are about 30%. The interaction of γ-trifluorochloropropane with magnesium and allyltrichlorosilane gave only γ-trifluoropropylallyldichlorosilane at a 9.2% yield, that of γ-trifluorochloropropane with magnesium and vinyltrichlorosilane gave 32% γ-trifluoropropylvinyldichlorosilane and 26% bis (γ-trifluoro-

Card 2/3

L 22441-65
ACCESSION NR: AP5000484

propyl)vinylchlorosilane. Orig. art. has: 2 formulas

ASSOCIATION: None

SUBMITTED: 26Sep63 ENCL: 00 SUB CODE: GC, OC

NR REF SOV: 000 OTHER: 000

Card 3/3

L 31888-66 EWT(m)/EWP(j)/T RM

ACC NR: AP6012530 (A) SOURCE CODE: UR/0062/66/000/003/0478/0482

27
B

AUTHOR: Popeleva, G. S.; Andrianov, K. A.; Golubtsov, S. A.

ORG: none

TITLE: Study of the reaction of methyl(chlorophenyl)chlorosilanes with hydrochlorosilanes

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1966, 478-482

TOPIC TAGS: silane, organic synthesis, condensation reaction, substitution reaction

ABSTRACT: Using the previously described thermal condensation method [Authors Certificate No. 134699; *Zh. obshch. khimii*, 32, 557 (1962)] alkylchlorosilane hydrides were condensed with alkyl(chloroaryl)chlorosilanes by the following scheme:

$$Cl_{3-n}(CH_3)_nSiC_6H_4Cl + HSiR_mCl_{3-m} \rightarrow Cl_{3-n}R_nSiC_6H_4SiR_mCl_{3-m} + HCl$$

where n=0, 1, 2, 3; m=0, 1, 2. The condensation reaction is accompanied by a side reaction involving the reduction of chlorine in the aryl radical by the hydrogen of chlorosilane hydride. The products of substitution of hydrogen at the silicon by chlorine can be formed also by the decomposition reaction in hydrogen chloride medium as follows:

$$HSiR_nCl_{3-n} + HCl \rightarrow SiR_nCl_{4-n} + H_2$$

$$Cl_{3-n}R_nSiC_6H_4SiR_mCl_{3-m} + HCl \rightarrow Cl_{3-n}R_nSiC_6H_5 + ClSiR_mCl_{3-m}$$

Card 1/2 UDC: 542.91+546.287

L 13901-66 EWT(m)/EWP(j) RM

ACC NR: AP6002863 SOURCE CODE: UR/0286/65/000/024/0020/0020

INVENTOR: Popov, A. F.; Kornayev, N. N.; Golubtsov, S. A.; Popeleva, P. S.

ORG: none

TITLE: Preparative method for bis(dimethylchlorosilyl)benzene. Class 12, No. 176892

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965, 20

TOPIC TAGS: silane

ABSTRACT: An Author Certificate has been issued for a preparative method for bis(dimethylchlorosilyl)benzene, involving the reaction of metallic magnesium with p-dibromobenzene and dimethyldichlorosilane. To simplify the process, it is carried out in the presence of 0.001—0.01 g-mol titanium tetrachloride catalyst/mol metallic magnesium. [SM]

SUB CODE: 07/ SUBM DATE: 22Jul64/ ATD PRESS: 419

Card 1/1 UDC: 547.419.5.07

POPELYASH, Ye.N., kand.tekhn.nauk

Performance of diaphragms in power systems. Trudy MAI no.120: 138-158 '60. (MIRA 13:9)
(Diaphragms (Mechanical devices))

POPEL'SKIY, B. (Polska)

International Congress on Legal Medicine in Belgium July 19-21, 1957. Sud.-med.ekspert. 2 no.3:40-42 Jl-S '59. (MIRA 13:4)
(MEDICAL JURISPRUDENCE--CONGRESSES)

PERMINOV, A.A., inzh.; POPEL', S.I., kand.tekhn.nauk dots.; SMIRNOV, N.S., kand.tekhn.nauk; ZHUKOVA, V.P., inzh.

Adhesion of molten silicates to low-alloy steels. Izv.vys. ucheb.zav.; chern.met. 2 no.10:3-7 O '59. (MIRA 13:3)

1. Ural'skiy politekhnicheskiy institut. Rekomendovano kafedroy teorii metallurgicheskikh protsessov Ural'skogo politekhnicheskogo instituta.
(Steel--Metallurgy) (Silicates)

POPEL', S. I., Doc Tech Sci (diss) -- "Investigation of phenomena at phase boundaries in the steel-smelting process". Sverdlovsk, 1960. 23 pp (Min Higher and Inter Spec Educ RSFSR, Ural Polytech Inst im S. M. Kirov), 150 copies (KL, No 12, 1960, 126)

24(6) PHASE I BOOK EXPLOITATION SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotempera-turnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh; trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Transactions of the Conference on Experimental Techniques and Methods of Investigation at High Temperatures) Moscow, AN SSSR, 1959. 789 p. (Series: Akademiya nauk SSSR. Institut metallurgii. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and pro-duction of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

Experimental Techniques and Methods (Cont.) SOV/2117

Yeremenko, V.N., O.V. Zudilova, and L.A. Gayevskaya. Constitu-tion Diagram of the System Chromium-Niobium 224

Negrescu, T. Quantitative Relationships Existing Between Components Under Conditions of Equilibrium of Slags in the Blast-Furnace Hearth 237

III. PHYSICAL PROPERTIES OF LIQUID METALS AND SLAGS

Popel', S.I., and O.A. Yesin. Methods of Measuring the Surface Tension of Liquid Metals and Slags 257

A comparison was made of the results obtained in measuring the surface tension of slags of the systems CaO-SiO_2-Al_2O_3 and CaO-SiO_2-MgO by the maximum-bubble-pressure method and the sessile-drop method. It was shown that the replacement of SiO_2 by CaO (with constant Al_2O_3 content) in the system CaO-SiO_2-Al_2O_3 leads to an increase in surface tension. An increase in the content of Al_2O_3 (with a constant ratio of CaO to SiO_2) also results in higher surface tension. This is explained by a breaking-down of silicate anions. It was shown that the replacement of CaO by MgO in the system CaO-SiO_2-MgO has practically no effect on surface tension.

POPEL', V. A.

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Knizhnaya Letopis' No. 6, 1955

PETRU, F., inz. CSc.; POPELA, B., inz.; KRSEK, J., inz.; RUBES, M.; VESELA, Z., inz.

Gaseous molecular light generator for visible and infrared regions. Jemna mech opt 9 no. 9:269-275,282 S '64.

1. Institute of Instrument Technology, Brno.

PETRU, Frantisek, inz.; BOCEK, Vlastislav, inz.; POPELA, Bohumir, inz.; KRSEK, Jiri, inz.

Helium-neon gas laser. Slaboproudy obzor 25 no.4:181-185 Ap '64.

1. Institute of Instrument Technology, Czechoslovak Academy of Sciences, Brno.

MAN, M.; NECIU, A.; POPESCU, A.; CRISTESCU, L.

Rapid method for determining the humidity in complex fertilizers.
Rev chimie Min petr 15 no.6:350-351 Je '64.

PETRU, Frantisek; POPELA, Bohumir; KULHANEK, Jan; CUCHY, Zdenek; BOBEK, Milan; VITAK, Frantisek

Small infrared spectrophotometer. Chem listy 57 no.9:964-972 S '63.

1. Ustav pristrojove techniky, Ceskoslovenska akademie ved, Brno a Vyzkumny ustav monokrystalu, Turnov.

ACCESSION NR: AP4029389 Z/0039/64/025/004/0181/0185

AUTHOR: Petru, Frantisek (Engineer); Bocek, Vlastislav (Bochek, V.) (Engineer); Popela, Bohumir (Engineer); Krsek, Jiri (Krshek, Y.) (Engineer)

TITLE: Gas laser with a mixture of helium and neon

SOURCE: Slaboproudy obzor, v. 25, no. 4, 1964, 181-185

TOPIC TAGS: laser, stimulated emission, emission spectrum, emission line, emission intensity, helium emission, neon emission

ABSTRACT: A He-Ne (9:1) laser emitting continuous radiation at a wavelength of 1.1523 μm was used for measurements of stimulated emissions and emission spectra. The emitted radiation was measured by a PbS photoelectric cell and a monochromator made from an optical goniometer. Results are given of measurements with three silica tubes of various lengths and diameters and closed by plates installed at various Brewster angles. The best results with stimulated emission (~ 5 mW) were obtained with a tube in which the silica plates were fastened with glue rather than being soldered on. These tubes are free of deformation and tension. The relationship between input and the ratio P/P max. is shown on a graph for one type of tube. The reliability at maximum output was found to be good, and the stability of the emission during several hours of operation

ACCESSION NR: AP4029389

was ±3%/hr. Orig. art. has: 9 figures and 1 table.

ASSOCIATION: Ustav pristrojove techniky CSAV, Brno (Institute for Equipment Design, Czechoslovak Academy of Sciences)

SUBMITTED: 10Dec63 DATE ACQ: 01May64 ENCL: 00

SUB CODE: SO, PH NO REF SOV: 003 OTHER: 011

Card 2/2

POPELA, Bohumir

Method of measuring the transmission linearity of [redacted]rophotometers by a rotary weakener. Chem listy 57 no.10:1062-1068 O '63.

1. Ustav pristrojove techniky, Ceskoslovenska akademie ved, Brno.

POPELAR, V.

"Diesel Engine in the Popular Car", P. 560, (SVET MOTORU, Vol. 8, No. 18, Aug. 1954, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 1, Jan. 1955, Uncl.

POPELKA, J.

Distr: 4E3b/4E2c(j)

Liquid-liquid equilibrium for the system butene-1,3-butadiene-ammoniacal copper(I) acetate. J. Popelka and L. Rychter (Výzkumný ústav kaučuku, Gottwaldov, Czech.). *Collection Czechoslov. Chem. Communs.* 24, 3553-61(1959)(in German).—The equil. for the systems 1-butene-1,3-butadiene-AcOCu at −10°, 2-butene-1,3-butadiene-AcOCu at −10°, and for the mixt. butenes-1,3-butadiene-AcOCu at −10, 0, +10, 20, 30, and 38° are reported together with correlation relations between these equil. The soly. of 1-butene, 2-butene, and 1,3-butadiene in AcOCu is tabulated in relation to temp. AcOCu is a more selective solvent for butadiene than for the butenes, 1-butene is more sol. than 2-butene, the soly. of all hydrocarbons mentioned in AcOCu decreases with rising temp. AcOCu is not sol. in the hydrocarbons. The soly. of butadiene in AcOCu depends on the compn. of the soln. in that it is directly proportional to the content of Cu^+. For the correlation of equil. the equation $s_1 = c_1/(a + bc_1)$ was used, where s_1 is the concn. of butadiene in the solvent phase in wt. %; c_1 is the concn. of butadiene in the hydrocarbon phase in wt. fractions, and a and b are consts. The importance of the measured equil. for construction of an app. for the extn. of butadiene is discussed. L. J. Urbánek—

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S/123/62/000/009/005/017
A052/A101

26.2190

AUTHORS: Houba, J., Popelar, M.

TITLE: Adjusting valve control system

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 9. 1962, 53, abstract 9A338 ("Chekhosl. pat.", kl. 42 r, 1/03, no. 95582, 15.06.60)

TEXT: A pickup responding to the change of the controlled quantity switches on and off the electric circuit of the heater which heats the liquid in the container of the generator. At a closed circuit of the heater the liquid evaporates, and the produced pressure is transmitted through an elastic element to the control element. At a switched off heater the vapor condenses, the pressure drops and the control element under action of the elastic element returns to the initial state. The pickup (a bimetal plate, for instance), unlike the control system with a thermostat, is not affected by outside forces. This secures a high sensitivity of pickups, and the possibility of emergence of natural oscillations in them is eliminated. The system is switched on by means of the control circuit relay, whereby a small low-voltage current is conducted through the contacts of the pickup. The control circuit of the heater is

Card 1/2

Z/034/60/000/08/007/030
E073/E335

AUTHOR: Popelář, Vladislav, Engineer

TITLE: Manufacture of Seamless Tube Arcs by Hot Drawing

PERIODICAL: Hutnické listy, 1960, Nr 8, pp 619 - 625

ABSTRACT: The author summarises theoretical knowledge and practical experience gained in the Vitkovice Ironworks K. Gottwald over a period of three decades. In the paper he derives the basic equations for calculating the necessary diameter and length of the tube in the initial state and also gives the equations used for calculating the steering curve of the broach transition part. Relations are also derived on the conditions of deformation which are necessary to achieve a uniform wall thickness during drawing on a bent part of the broach and the required shape of the steering curve for obtaining a continuous flow of material. Non-adherence to the relations derived in this paper may lead to wave-formation in the material or to the formation of a thicker wall on the inner radius of the curvature. Information is given on the equipment for hot drawing of such bent pipes and on the material used and defects occurring in the process of manufacture. The manufactured

Card1/2

Z/034/60/000/08/007/030
E073/E335

Manufacture of Seamless Tube Arcs by Hot Drawing

pipe bends comprise tubes with external diameters between 32 and 219 mm, wall thicknesses between 2.5 and 6 mm and arcs of 180, 90 and 45°. It is stated that the process of manufacture of such bent pipes is protected in most industrial states by patents and for obvious reasons this process of manufacture has never been described in literature nor has thorough theoretical work on this process been published. There are 18 figures, 1 table and 1 Czech reference.

ASSOCIATION: Vítkovické železárny K. Gottwalda
(Vitkovice Ironworks K. Gottwald)

SUBMITTED: August 25, 1959

Card 2/2

POPELAR, Vladislav, inz.

Drill pipes for geologic prospecting. Geol pruzkum 6 no. 7: 203-205 Jl '64.

1. Vitkovicke zelezarny Klementa Gottwalda National Enterprise, Ostrava - Vitkovice.