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LELICHUK, S.L.

SOV/76-33-7-21/40

5(4)

AUTHORS: Krylov, V. D., Vabel', Ya. I., Yefremov, Yu. N., Klenina, A. M., Lel'chuk, S. L. (Moscow)

TITLE: Kinetics of Phase Transformations in Alloyed Cu - Si Contact Masses and Its Relation With the Kinetics of Direct Synthesis of Ethyl Chlorosilanes

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 7, pp 1594-1601 (USSR)

ABSTRACT: The kinetics of the reaction between ethyl chloride (I) and silicon is closely related with the structural transformations occurring in Cu - Si alloys during reaction with alkyl chlorides. The authors investigated samples of Cu - Si alloy (24.7 wt% Cu) made from KR-1 silicon and M-2 copper. The samples were treated with (I) at 280, 300, 325, 340, and 360°C for 10 and 30 minutes and 1, 2, 3, and 6 hours. The phase composition of the contact mass was quantitatively determined by means of an X-ray chamber of the type VRS-3 and a self-recording MF-4 microphotometer. The experimental results obtained indicate that in the initial stage only minimum reaction takes place between the Cu - Si alloy and (I), or there is a period of

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induction. This is ascribed to a certain delay in the formation of active reaction centers on the surface of the η-phase. The initial activity of the Cu - Si alloy with respect to (I) is determined by the decomposition rate of the η-phase, i.e. by the reactivity of silicon that passes over into the compound Cu_3Si. The Si atoms of the structure lattice of the η-phase probably are more reactive than those of the Si lattice. The occurrence of self-acceleration of the reaction between (I) and the Cu - Si alloy is ascribed to a catalytic effect of copper (that is formed during the decomposition of the η-phase). The intermetallic Cu_3Si compound is of special importance in the process under investigation as it is assumed to act as an initiator of the process and as a catalytic donor. In conclusion, the authors thank S. A. Golubtsov for his assistance. There are 10 figures and 6 references, 4 of which are Soviet.

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

POPKOV, K.K.; LEL'CHUK, S.L.; KUDRYAVTSEVA, A.S.

Spectroscopic determination of impurities in a silicon-copper alloy and in trichlorosilane. Plast.massy no.1:39-41 '60. (MIRA 13:6)

(Silicon-copper alloys--Spectra) (Silane--Spectra)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

S/191/60/000/002/007/012
B027/B058

AUTHORS: Shtiftman, L. M., Lel'chuk, S. L., Zarinskiy, V. A.

TITLE: Determination of Electrolyte Traces in Organosilicon Liquids

PERIODICAL: Plasticheskiye massy, 1960, No. 2, pp. 26-28

TEXT: A method for the determination of acid traces in organosilicon liquids by means of high-frequency currents is dealt with in this study. G. V. Troitskiy (Ref. 1) who was the first to use a high-frequency oscillation generator for determining zonal boundaries in chromatography, is said to be a pioneer in this field. B. P. Yershov et al. (Ref. 7) used the high-frequency method for acidimetric and alkalimetric phenol determination in the manufacture of pressed materials, as well as for the determination of the saponification number of dark-colored solutions. The authors experimented with samples of organosilicon liquids for the application of high-frequency titration as well as the titration with phenolphthalein as indicator. The acid numbers obtained with the former method were higher, since in this case not only H^+ ions were determined at the same time, but also other ions. Besides H^+ ions, other ions such

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SHAKHPARONOV, M.I.; LEL'CHUK, S.L.; KORCHEMSKAYA, K.M.; MARTYNOVA, M.Ye.; BABURINA, I.I.; VORONINA, R.D.

Vapor pressure and density in the binary systems methyldichlorosilane - trimethylchlorosilane and trichlorosilane - benzene. Zhur. prikl. khim. 33 no.12:2699-2703 D '60. (MIRA 14:1)
(Silane) (Benzene) (Vapor pressure)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

KORCHEMSKAYA, K.M.; SHAKHPARONOV, M.I.; LEL'CHUK, S.L.; MARTYNOVA, M.YE.; BABURINA, I.I.; VORONINA, R.D.

Vapor pressure and density of binary solutions of chloro derivatives of silane. Zhur. prikl. khim. 33 no.12:2703-2708 D '60. (MIRA 14:1)

(Silane) (Vapor pressure)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

S/076/60/034/008/007/014
B015/B054

AUTHORS: Shakhparonov, M. I., Balamutova, E. A., Lel'chuk, S. L., Mikheyev, Ye. P., Shutova, L. V., Glushkova, L. P. and Martynova, M. Ye. (Moscow)

TITLE: Investigation of Pressure and Density of the Vapor in Systems Containing Organosilicon Compounds. I. The System Benzene - Methyl-dichlorosilane - Methyl-phenyl Dichlorosilane

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1734-1740

TEXT: The authors determined pressure and density of the vapor of a number of halogen alkyl silanes and -aryl silanes since these substances readily react with water vapor or metals, dissolve in lubricants, and easily polymerize. In the present paper, they report on the system benzene - methyl-dichlorosilane - methyl-phenyl dichlorosilane. The experimental arrangement (Fig. 1) described in Ref. 2 is based on the

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Investigation of Pressure and Density of the Vapor in Systems Containing Organosilicon Compounds. I. The System Benzene - Methyl-dichlorosilane - Methyl-phenyl Dichlorosilane

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B015/B054

principle of hydrostatic weighing, and is thoroughly explained. The apparatus includes a quartz balance which is installed in a glass balloon in a thermostat. In another thermostat there is the evaporator connected with an Hg manometer. Balloon and evaporator are joined by a thermally insulated, heated pipe. A quartz ball is suspended from the quartz spiral of the balance; as the vapor of the substance investigated enters the balloon, the quartz ball loses in weight, and the vapor density can be determined from the decrease in length of the spiral. The method of operation, the calibration of the instrument, and an estimation of the errors of measurement are indicated. The latter are about 1% in the pressure-, and about ± 2.5% in the density determination. The molecular weight of the liquid vapors was calculated by the Mendeleyev-Clapeyron equation, and compared with data of publications (Table 1); pressure and density values of methyl-dichlorosilane and methyl-phenyl dichlorosilane, as well as their solutions, are given in Table 2. The results show that the vapors represent associate complexes. The Trouton

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Investigation of Pressure and Density of the Vapor in Systems Containing Organosilicon Compounds. I. The System Benzene - Methyl-dichlorosilane - Methyl-phenyl Dichlorosilane

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constant for the vapors was calculated, and given in Tables 2 and 3. It is found that at 40° - 100°C the vapor composition of the solutions benzene - methyl-dichlorosilane - methyl-phenyl dichlorosilane is practically equal to the vapor of the corresponding binary mixture benzene - methyl-dichlorosilane. The heats of vaporization and the entropies were calculated. There are 5 figures, 3 tables, and 4 references: 3 Soviet and 1 US.

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

SUBMITTED: October 30, 1958

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84245

S/076/60/034/009/003/022
B015/B056

11.2219
5.3700 also 2205

AUTHORS: Balamutova, E. A., Shakhparonov, M. I., Lel'chuk, S. L., Lomov, A. L., Mal'kova, G. N., Martynova, M. Ye., and Glushkova, L. F.

TITLE: Investigation of the Pressure and Density of Vapor in Systems Containing Organosilicon Compounds. II. The Systems: Methyldichlorosilane - Methyltrichlorosilane - Methylphenyldichlorosilane, and Methylphenyldichlorosilane - Methylchlorophenyldichlorosilane - Methyldichlorophenyldichlorosilane

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9, pp. 1916-1919

TEXT: The working method and the measuring technique of the investigations mentioned in the title have already been described in a previous paper (Ref. 1). The pressure and density of the saturated vapor phase over the systems mentioned in the title were measured in a broad concentration and temperature range. The constants of the Antoine equations,

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Investigation of the Pressure and Density of Vapor in Systems Containing Organosilicon Compounds. II. The Systems: Methyldichlorosilane - Methyltrichlorosilane - Methylphenyldichlorosilane, and Methylphenyldichlorosilane - Methylchlorophenyldichlorosilane - Methyldichlorophenyldichlorosilane

as well as the values of the evaporation heats and evaporation entropies for the individual components (Table 1), and the two- and three-component solutions at normal boiling temperature were calculated (Table 2). The values obtained show that the vapors of methyltrichlorosilane and methylchlorophenyldichlorosilane contain associated molecules, whereas the vapors of methyldichlorophenyldichlorosilane do not associate. At 100°C and about 900 torr, the vapor (in equilibrium) over a solution of 50 mole% CH_3SiHCl_2 + 50 mole% CH_3SiCl_3 consists nearly entirely of methyldichlorosilane. At temperatures from 40° to 100°C, the vapor composition of the three-component solutions CH_3SiHCl_2 - CH_3SiCl_3 - $CH_3C_6H_5SiCl_2$ is slightly different from that of the binary system CH_3SiHCl_2 - CH_3SiCl_3 at the same molar ratio of the latter components. Calculations carried

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B015/B064

AUTHORS: Balamutova, E. A., Shakhparonov, M. I., Lel'chuk, S. L., Lomov, A. L., Mikheyev, Ye. P., Martynova, M. Ye., and Glushkova, L. F.

TITLE: Investigation of the Vapor Pressure and Density in Systems Containing Organo-silicon Compounds. III. The Systems Dimethyldichlorosilane - Methylchlorosilane - Dimethylchlorosilane and Trimethylchlorosilane - Dimethylchlorosilane - Dimethyl Dichloromethylchlorosilane

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10, pp. 2156-2159

TEXT: Pressure and density of the saturated vapor of the systems $(CH_3)_2SiCl_2$ - $CH_3CH_2ClSiCl_2$ - $CH_3CHCl_2SiCl_2$ and $(CH_3)_3SiCl$ - $(CH_3)_2CHCl_2SiCl$ were investigated in the wide range

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B015/B064

AUTHORS: Balamutova, E. A., Shakhparonov, M. I., Lel'chuk, S. L., Lomov, A. L., Mikheyev, Ye. P., Martynova, M. Ye., and Glushkova, L. F.

TITLE: Investigation of the Vapor Pressure and Density in Systems Containing Organo-silicon Compounds. III. The Systems Dimethyldichlorosilane - Methylchloromethyldichlorosilane and Trimethylchlorosilane - Dimethylchloromethylchlorosilane - Dimethyl Dichloromethylchlorosilane

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 10, pp. 2156-2159

TEXT: Pressure and density of the saturated vapor of the systems $(CH_3)_2SiCl_2$ - $CH_3CH_2ClSiCl_2$ - $CH_3CHCl_2SiCl_2$ and $(CH_3)_3SiCl$ - $(CH_3)_2CH_2ClSiCl$ - $(CH_3)_2CHCl_2SiCl$ were investigated in the wide range

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Investigation of the Vapor Pressure and Density in Systems Containing Organo - - silicon Compounds. III. The Systems Dimethyldichlorosilane - Methylchloromethyldichlorosilane and Trimethylchlorosilane - Dimethylchloromethylchlorosilane - Dimethyl Dichloromethylchlorosilane

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B015/B064

of concentration and for temperatures of from 0° to 150°C. The same method of measurement was used as in a previous paper (Ref. 1), and pressure and density of the individual components were determined. The curves obtained on the temperature dependence of pressure and density show that pressure and density of the systems investigated rise exponentially with temperature. Table 1 gives the values of the refractive indices, the density, the boiling points of the components at 760 mm Hg, the molecular weight of vapor at this pressure, the values of the constants of the Antoine equation as well as the values of the evaporation heat and evaporation entropy at the normal boiling point.

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Table 1

1 Вещество	n_D^{20}	d_4^{20}	2 Т. кип. при 760 мм	3 M пара при 760 мм	4 M теор	A	B	C	ΔH	ΔS
$(CH_3)_2SiCl_2$	1,4052	1,0715	70,1	129,0	129,0	9,572	3110	345	7450	21,7
$CH_3CH_2ClSiCl_3$	1,4494	1,2832	119,5	171,0	163,6	6,930	1265	194	9150	22,6
$CH_2CHCl_2SiCl_3$	1,4690	1,4107	149,0	198,2	198,0	6,306	123,0	203	7940	18,8
$(CH_3)_3SiCl$	1,3888	0,8581	57,7	112,3	108,65	7,0098	1184	229	7560	22,8
$(CH_3)_2CH_2ClSiCl$	1,4372	1,0844	114,9	152	143,1	9,035	2635	314	8460	21,8

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Table 2

Таблица 2

Solution Раствор	n_D^{20}	d_4^{20}	A	B	C	ΔH	ΔS	T. кип. °C
50% $(CH_3)_2SiCl_2$+50% $CH_3CH_2ClSiCl_2$	1,4309	1,1842	5,826	732	159	6960	19,2	89,4
50% $(CH_3)_2SiCl_2$+50% $CH_3CHCl_2SiCl_2$	1,4450	1,252	6,535	1130	216	7250	19,8	93,5
50% $CH_3CH_2ClSiCl_2$+ + 50% $CH_3CHCl_2SiCl_2$	1,4619	1,344	7,054	1435	124	10800	26,8	130,9
33% $(CH_3)_2SiCl_2$+33% $CH_3CH_2ClSiCl_2$+ + 34% $CH_3CHCl_2SiCl_2$	1,4469	1,2679	—	—	—	9500	25,2	103,0
50% $(CH_3)_3SiCl$ + 50% $(CH_3)_2$× ×$CH_2ClSiCl$	4,4158	0,6197	14,763	10550	810	7540	21,4	78,8
50% $(CH_3)_3SiCl$+50% $(CH_3)_2$ × × $CHCl_2SiCl$	1,4304	1,05121	6,923	1426	264	830	18,9	88,5
50% $(CH_3)_2CH_2ClSiCl$ + 50% $(CH_3)_2$ × × $CHCl_2SiCl$	—	1,1585	—	—	—	5480	13,8	124,0
33% $CHCl_2(CH_3)_2SiCl$ + 34% $(CH_3)_2$× × $SiCl$ + 33% $CH_2CH_2ClSiCl$	1,4321	1,0670	—	—	—	7600	19,9	108,0

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Table 2 (continued) Таблица 2 (*продолжение*)

Solution Раствор	M	$x'_{(CH_3)_2SiCl_2}$	$x'_{CH_3CH_2 \times ClSiCl_2}$	$x'_{(CH_3)_2SiCl}$	$x'_{(CH_3)_2CH_2 \times ClSiCl}$
50% $(CH_3)_2SiCl_2$+50% $CH_3CH_2ClSiCl_2$	142,3	0,68	0,32	—	—
50%$(CH_3)_2SiCl_2$+50% $CH_3CHCl_2SiCl_2$	139,7	0,845	—	—	—
50%$CH_3CH_2ClSiCl_2$+ +50%$CH_3CHCl_2SiCl_2$	180,0	—	0,605	—	—
33%$(CH_3)_2SiCl_2$+33%$CH_3CH_2ClSiCl_2$+ +34% $CH_3CHCl_2SiCl_2$	142,5	0,70	0,18	—	—
50%$(CH_3)_3SiCl$+50%$(CH_3)_2$× ×$CH_2ClSiCl$	113,0	—	—	0,90	0,10
50% $(CH_3)_3SiCl$+50% $(CH_3)_2$× ×$CHCl_2SiCl$	114,0	—	—	—	—
50%$(CH_3)_2CH_2ClSiCl$ + 50% $(CH_3)_2$× ×$CHCl_2SiCl$	147,5	—	—	—	0,860
33% $CHCl_2(CH_3)_2SiCl$ + 34% $(CH_3)_2$× ×$SiCl$+33 $CH_3CH_2ClSiCl$	135,6	—	—	≈0,855	≈0,132

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Legend to Tables 1, 2: In Table 1, 1 denotes the substance, 2 = boiling point at 760 mm Hg, 3= molecular weight M at 760 mm Hg, 3 = M theoretical. 1 = boiling point in °C in Table 2. There are 4 figures, 2 tables and 2 Soviet references.

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

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B004/B064

AUTHORS: Shakhparonov, M. I., Lel'chuk, S. L., and Korchemskaya, K. M.

TITLE: The Thermodynamic Properties of the Solutions of Chlorine Derivatives of Silane

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 6, pp. 1388-1390

TEXT: The authors report on measurements of the pressure P and density γ of the saturated vapor of the following systems: CH_3SiHCl_2 - $SiCl_4$; $SiHCl_3$ - C_6H_6; CH_3SiCl_3 - $SiCl_4$; $(CH_3)_3SiCl$ - CH_3SiHCl_2; $(CH_3)_3SiCl$ - CH_3SiCl_3, as well as solutions of CH_3SiHCl_2 and CH_3SiCl_3 in the azeotropic mixture of 45.93 mole% $(CH_3)_3SiCl$ and 54.07 mole% $SiCl_4$. Ref. 1 describes the methods of P and γ measurement. Table 1 gives the values of the constants A,B,C of the Antoine equation $\log P = A - B(C+T)$ for the systems investigated, as calculated from the experimental data of P. The molecular weight of the saturated vapor was calculated from the

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The Thermodynamic Properties of the Solutions of Chlorine Derivatives of Silane

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B004/B064

equation $\overline{M} = \gamma RT/P$, and its composition from the equation $\overline{M} = \sum_i M_i x_i'$. Fig. 1 shows the total and partial pressures in the system $SiHCl_3 - C_6H_6$ at 30°C as a function of the composition. The isothermal lines P and P_i of the system $CH_3SiHCl_2 - SiCl_4$ at 40°C, and of the system $CH_3SiCl_3 - SiCl_4$ at 50°C are given in Fig. 2. The systems mentioned show little positive deviations from the ideal case. The systems $(CH_3)_3SiCl - CH_3SiCl_3$; $CH_3SiHCl_2 - (CH_3)_3SiCl$; azeotropic mixture - CH_3SiCl_3; and azeotropic mixture - CH_3SiHCl_2 follow the Raoult law. The isobaric lines of these systems at P = 760 torr are shown in Fig. 3. There are 3 figures, 1 table, and 1 Soviet reference.

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

PRESENTED: April 4, 1960, by V. I. Spitsyn, Academician

SUBMITTED: April 2, 1960

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B016/B054

5.5310 1273, 1282, 1153

AUTHORS: Popkov, K. K., Lel'chuk, S. L., Kudryavtseva, A. S.

TITLE: Spectroscopic Determination of Impurities in Silicon - Copper Alloy and in Trichlorosilane

PERIODICAL: Plasticheskiye massy, 1960, No. 1, pp. 39-41

TEXT: The authors report on their methods of quantitative spectroscopic determination of: I) impurities in silicon - copper alloys (Si-Cu), which sometimes themselves deactivate the Si-Cu catalyst in small amounts, and disturb the synthesis of organosilicon compounds; they are: Fe, Mg, Al, Bi, Sn, Ti, Ca, and Sb; II) impurities in trichlorosilane serving as an intermediate for the production of pure silicon for semiconductor purposes, namely: Fe, Al, Mg, Pb, and Cu. I) A powdery alloy with a Cu content of 10-20% was investigated. An analysis by the three-standard method (Ref. 1) was made. Powdery Cu- and Si oxides were impregnated with aqueous salt solutions, and dried at 80-85%. The background of the continuous spectrum served as internal standard. Insoluble Ti-, Sb-, and Ca salts were added

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Spectroscopic Determination of Impurities in Silicon - Copper Alloy and in Trichlorosilane

to the standards in a dry state diluted with Cu oxide. Cu oxide was used in an amount corresponding to 20% Cu in the standards. The second component of the standards was silicon of the semiconductor type with traces (about 0.005%) of Mg and Al. Table 1 shows the concentrations of impurities in the standards. The latter and the alloy samples were pulverized to a grain size of 0.05 mm. The samples were burnt in a preheated (to 800-900°C) graphite crucible (internal diameter 4 mm, depth 8mm) according to Giprotsvetmetobrabotka (State Design and Planning Scientific Research Institute for Working of Nonferrous Metals) in an electric arc (alternating current). Two spectra were taken during the combustion of one sample: 1) during 30 sec, and 2) during 40 sec. The lines of easily volatile impurities (Pb, Sb, Ca, Bi, St) were photometrically determined on a plate exposed in such a manner. Poorly volatile impurities (Fe, Ti, Mg, Al) were burnt in a smaller (3 × 4 mm) crucible under a layer of annealed coal for 40 sec. Table 2 shows the analytical lines and measurements of the background. On the basis of the measured values, the authors plotted a calibration diagram (Fig. 1). II) The determination of the mentioned impurities

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Spectroscopic Determination of Impurities in Silicon - Copper Alloy and in Trichlorosilane

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in trichlorosilane is based on a combustion of its hydrolysis product (white crystalline powder) in the electric arc as under I). The authors used the method of calibration diagrams (Fig. 2) plotted on the basis of standard samples. Otherwise, the methods were similar to those of part I). Table 3 shows the concentration intervals, in which the impurities in the standards were determined. The weighed portion was fully burnt up. The amounts of impurities were determined on the basis of analytical lines given in Table 4. The relative error in the cases I) and II) did not exceed 10%. Legend to Fig. 2: I_{Ω} - I_{line}; I_{Ξ} - I_{backgr}. There are 2 figures, 4 tables, and 3 Soviet references.

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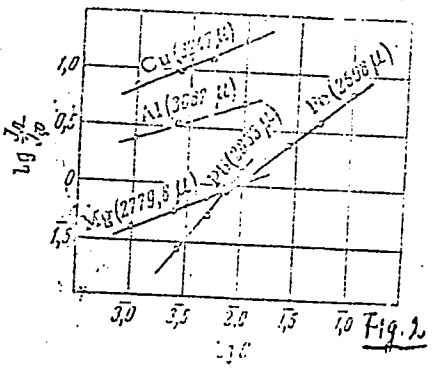

Fig. 2

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25653
S/080/60/033/012/007/024
D209/D305

5.3700

AUTHORS: Shakhparonov, M.I., Lelchuk, S.L., Korchemskaya, K.M., Martynova, M.Ye., Baburina, I.I. and Voronina, R.D.

TITLE: Investigation of pressure and vapor density in binary systems methyldichlorosilane - trimethylchlorosilane and silicochloroform - benzene

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960, 2699 - 2703

TEXT: The authors studied pressure and vapor density of liquid systems CH_3SiHCl_2 - $(CH_3)_3SiCl$ and $SiHCl_3$ - C_6H_6 in order to obtain data necessary for determining the conditions for rectifying haloalkylsilanes. The measurements were carried out in an apparatus described in an earlier work (Ref. 1: ZhFKh 8, 1734, 1960). Throughout the experiment the composition of liquids was controlled by measuring their densities at 20°C with the use of a pycnometer. The accuracy of P and γ measurements for individual li-

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quids was within 0.1 %. The molecular weight of vapors was calculated from the equation $M = \gamma RT/P$. Liquids used in the experiments were obtained by chemical purification and fractionation. The constants of Antuan's equation $P = A - [B/(C + t)]$ and the values of enthalpy and entropy at P = 760 mm Hg are given in tabulated form. Vapor composition and partial vapor pressures of components may be calculated from the equation $M = M_1 x_1^v + M_2 (1 - x_1^v)$. Fig. 2 gives the relation of total and partial vapor pressures against the composition of methyldichlorosilane - trimethylchlorosilane solutions at 30 and 40°C. The relation between total and partial pressures and concentrations of silicochloroform - benzene at 30°C is also presented graphically. The graphs show that at 30-40°C CH_3SiHCl_2 - $(CH_3)_3SiCl$ solutions are characterized by slight deviations from the ideal solutions. In C_6H_6 - $SiHCl_3$ solution at 30°C similar deviations from Raoult's law are observed. The authors calculated concentrations of components in vapors in equilibrium with the li-

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Investigation of pressure ... S/080/60/033/012/007/024
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quid phase at 760 mm Hg and the results are given in tabulated form. There are 6 tables, 3 figures and 1 Soviet-bloc reference.

SUBMITTED: October 26, 1959

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

25554
S/080/60/033/012/007/024
D209/D305

S 3700

AUTHORS: Korchemskaya, K.M., Shakhparonov, M.I., Lel'chuk, S.L., Martynova, M.Ye., Baburina, I.I., and Voronina, R.D.

TITLE: Investigating pressure and vapor density of binary solutions of silane chloro-derivatives

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960, 2703 - 2708

TEXT: In the present work, carried out to obtain the necessary data for determining conditions for the rectification of haloalkylsilanes, the authors submit the results of investigations concerning pressure and vapor density under pressures of 150 - 800 mm Hg. The measurements were concerned with determining pressure P, density γ, and the molecular weight of saturated vapor pressure of individual liquids and solutions. The values of Antuan's equation constants and the enthalpy and entropy values for liquid vaporization at 760 mm are given in tabulated form. Graphically, the au-

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D209/D305

Investigating pressure and ...

thors give the isotherms of total and partial vapor pressures of liquids at 30, 40, 50 and 56°C. Total pressures were calculated from the vapor composition data obtained from $\bar{M}$ values derived from the equation $\bar{M} = \sum x_i M_i$. The average molecular weight of saturated vapors $\bar{M}$, used for partial vapor pressures determinations were chosen such that the deviations from Raoult's law corresponded to the Gibbs - Duhem equation. In all cases, values of $\bar{M}$ used in calculations differed by not more than 1 - 1.5 % from the experiment values. In this manner the values of partial vapor pressures and vapor compositions were controlled by the conditions of thermodynamics and the experimental data, with sufficient accuracy. Other tables represent the contents of vapor components in equilibrium with liquid phase at 760 mm Hg and the activity coefficients of the components of various temperatures. The results submitted show that the solutions of methyldichlorosilane - tetrachlorosilane are characterized by only slight positive deviations from the ideal solution, and in many cases may be considered as such. Solu-

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Investigating pressure and ...

tions of chlorosilane solutions at 40, 50 and 56°C. There are 3 figures, 7 tables and 2 Soviet-bloc references.

SUBMITTED: October 26, 1959

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Card 3/3

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Semen L'vovich; TUHYANSKAYA, Vitaliya Semenovna; ZETKIN, V.I., red.; KOGAN, V.V., tekhn. red.

[Physiocochemical properties of some organosilicon compounds] Fizikokhimicheskie svoistva nekotorykh kremniiorganicheskikh soedinenii. Moskva, Gos. nauchno-tekhn.izd-vo khim. lit-ry, 1961. 38 p. (MIRA 15:3)

(Silicon organic compounds)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

KORCHEMSKAYA, K.M.; SHAKHPARONOV, M.I.; LEL'CHUK, S.L.; MARTYNOVA, M.Ye.; BABURINA, I.I.; BORONINA, R.D.

Pressure and density of vapors from solutions of chlorine derivatives of silane. Part 4. Izv.vys.ucheb.zav.;khim.i khim.tekh. 4 no.4:584-587 '61. (MIRA 15:1)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra fizicheskoy khimii.

(Silane) (Vapor pressure)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

KORCHEMSKAYA, K.M.; SHAKHPARONOV, M.I.; LEL'CHUK, S.L.; KORABLINA, T.P.; BABURINA, I.I.; VORONINA, R.D.

Investigation of the vapor pressure and vapor density of binary solutions of silane chloro derivatives. Part 4. Izv.vys.ucheb. zav.; khim.i khim.tekh. 5 no.1:65-69 '62. (MIRA 15:4)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova, kafedra fizicheskoy khimii.
(Silane) (Vapor pressure) (Vapor density)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

S/191/63/000/002/007/019
B101/B186

AUTHORS: Tubyanskaya, V. S., Lel'chuk, S. L.

TITLE: Thermal decomposition of methyl and phenyl chlorosilanes

PERIODICAL: Plasticheskiye massy, no. 2, 1963, 19-21

TEXT: The behavior of the vapor of methyl and phenyl chlorosilanes during their synthesis in a continuous apparatus was studied. Methyl trichlorosilane, dimethyl dichlorosilane, and trimethyl chlorosilane remained undecomposed after several hours heating at 360°C in the presence of copper powder. The composition of the liquid products was the same before and after the experiment, and no gaseous products were formed. Methyl dichlorosilane did not decompose in the presence of Cu-Si alloy (81.4% Si, 17.5% Cu) at 360°C, but with a Cu-Si alloy that had been used to synthesize methyl chlorosilanes, decomposition started at 360°C and increased with rising temperature. Gaseous products containing hydrogen were formed at a ratio of $(0.18-0.73)\cdot10^{-3}$ mmoles per mole of CH_3SiHCl_2. On copper powder, an intensive exothermic decomposition started at 360°C and reached 75%. The liquid products contained mainly CH_3SiCl_3 and some $SiCl_4$, the gaseous

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product consisted of H_2 and some HCl. Coke was deposited on the copper. Phenyl trichlorosilane did not decompose at 600°C, slightly at 650-700°C, and noticeably at 750°C (about 52%) on a Cu-Si alloy (27.0% Cu) which had been used to synthesize phenyl chlorosilanes; $SiCl_4$, H_2, small amounts of unsaturated hydrocarbons and of benzene were formed. On copper powder, decomposition started only at 750°C (47%). The liquid products contained $C_6H_5SiCl_3$ and $SiCl_4$, and coke was formed. There are 8 tables.

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

S/191/63/000/003/008/0222
B101/B186

AUTHORS: Fadeyeva, A. V., Lel'chuk, Sh. L., Shcherbak, P. N. Kurzhenkova, M. S., Sergun'ko, A. M., Kosovova, Z. P.

TITLE: Method of eliminating the electrification of polyethylene films during their production

PERIODICAL: Plasticheskiye massy, no. 3, 1963, 27 - 30

TEXT: The effect of alcohols on the electrostatic charge forming on high-density polyethylene (HDPE) was studied. Alcohols were obtained by oxo-synthesis of unsaturated products of petroleum cracking. Oxyethylated alcohols had the general composition C_nE_m, where C_n is the initial alcohol with n C atoms, and E_m is the number of ethylene oxide moles per alcohol mole. The effect of the following substances was tested: 0.2-1.0% $C_8E_{3.06}$; $C_{12}E_{4.2}$; $C_{12-16}E_{3.28}$; $C_{12-16}E_{3.08}$; $C_{16}E_{3.3}$; C_8E_7; $C_{12}E_{6.4}$; $C_{12-16}E_{6.3}$; $C_{16}E_{6.0}$ added to HDPE at 120°C during rolling. The effect was determined by measuring the resistivity ρ_1 to the loss of charge by discharging a

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capacitor. The equation $\rho_l = k\tau/(\log v_o - \log v)\varepsilon$ was used for calculating ρ_l; $k = 4.9128 \cdot 10^{13}$; τ = duration of charged state (sec); v_o = initial voltage of sample; v = voltage after 5 min; ε = dielectric constant at 10^3 cps. For an HDPE film without additive, ρ_l was $\sim 2.6 \cdot 10^{18}$ ohm·cm. Results: On addition of 0.2%, all C_nE_m reduced ρ_l to $\sim 10^{15}$-10^{16} ohm·cm. On addition of 0.5%, $C_8E_{3.06}$; $C_8E_{7.0}$; $C_{12}E_{4.0}$; $C_{12-16}E_{3.08}$; $C_{12-16}E_{3.0}$; and $C_{16}E_{3.3}$ reduced ρ_l to $\sim 10^{15}$; whereas with $C_{12}E_{6.4}$; $C_{12-16}E_{6.27}$; $C_{12-16}E_{6.3}$, and $C_{16}E_{6.0}$ total loss of charge occurred. Products with a long carbon chain and high content of ethoxy groups gave the best effect. An addition of >0.2 C_nE_m causes migration of the oxyethylated alcohol to the film surface, thus increasing tan δ from $0.0008 \cdot 10^{-6}$ to $0.002 \cdot 10^{-6}$. $C_{10-11}E_{3.1}$; $C_{12-16}E_{2.9}$; $C_{16-18}E_{3.6}$; $C_{17-18}E_{3.4}$; $C_{10-11}E_{6.01}$; $C_{12-16}E_{6.6}$; $C_{16-18}E_{6.5}$; and $C_{17-18}E_{6.6}$ were also tested. They had been obtained by oxyethylation

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Method of eliminating the ... S/191/63/000/003/008/022
B101/B186

of alcohols synthesized by hydrogenation of fatty acids. An addition of 1% of these substances caused complete loss of charge. Efficiency increased with E_m, total loss thus occurring already at 0.5%. The experimental results were confirmed in industry. There are 2 figures and 3 tables.

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

L 12869-63 EWP(j)/EPF(c)/EWT(m)/BDS ASD Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3002939 S/0076/63/037/006/1377/1381 63

AUTHOR: Kry*lov, V. D.; Turetskaya, R. A.; Lel'chuk, S. L.

TITLE: Investigation of phase structure of infusible silicon-copper contact masses for direct synthesis of alkylchlorosilanes 7

SOURCE: Zhurnal fizicheskoy khimii, v. 37, no. 6, 1963, 1377-1381

TOPIC TAGS: alkylchlorosilane, ethyl chloride, ethylchlorosilane, silica

ABSTRACT: It has been shown in a previous article that silica and the intermetallic compound Cu sub 3 Si = Cu sub 3, Si (N-phase) = Eta phase enters into the reaction as a contact mass in the direct synthesis of alkylchlorosilane of copper silicate fusion. The phase structure undergoes several changes during its interaction with ethyl chloride. At the beginning of the synthesis, the silica from the intermetallic compound enters into the reaction, liberating the elemental copper. The rate of formation of the ethylchlorosilanes increases analogously with the decrease of Eta N-phase concentration and the increase of concentration of free copper in the contact mass. This points to the fact that the formation of ethyl-chlorosilanes is possible in the presence of Eta N-phase silica, and also through the reaction of ethylchloride with the free silica under a catalytic

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

L 12869-63

ACCESSION NR: AP3002939

action of elemental copper. Based on the above information, an X-ray investigation was made of the phase structures of nonfusible contact masses which are used in the direct synthesis of alkylchlorosilanes. The intermetallic compound Cu sub 3 Si is formed at temperatures 300 to 400C from silica and copper at the moment of separation of alkylchlorosilanes. The chlorosilanes decrease the temperature at which Cu sub 3 Si is formed. During the synthesis of alkylchlorosilanes Cu sub 3 Si and highly dispersed catalytically active copper is constantly formed. The silica entering into the composition of Cu sub 3 Si possesses a varied reactivity depending on the method of preparation of the contact mass. Orig. art. has: 6 figures.

ASSOCIATION: None

SUBMITTED: 05Jun62 DATE ACQ: 16Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 006 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

L 6390-66 EWT(m)/EPF(c)/EWP(j) RM

ACC NR: AP5026740 SOURCE CODE: UR/0286/65/000/017/0016/0016

INVENTOR: Lel'chuk, S. L.; Ivanova, N. A.; Vabel', Ya. I. (Deceased); Agafonova, M. I.; Frangulyan, G. D.; Semyannikova, A. M.

ORG: none

TITLE: A method for producing dimethyldichlorosilane. Class 12, No. 174185

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 16

TOPIC TAGS: silane, dimethyldichlorosilane, silicone

ABSTRACT: This Author's Certificate introduces a method for producing dimethyldichlorosilane by interacting methyl chloride with a silicon-copper alloy treated with a cadmium compound. The product yield is increased by using cadmium chloride in the amount of 4.3% of the weight of the alloy and subjecting the processed alloy to thermal treatment at 180°C.

UDC: 547.419.5.07

SUB CODE: GC,OC/ SUBM DATE: 27Oct62/ ORIG REF: 000/ OTH REF: 000

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APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Sh. L.

"Investigating the Effect of Low-Molecular and Polymeric Plasticizers on the Moisture-Resisting Properties of Polyvinyl Coatings." Cand Tech Sci, Leningrad Technological Inst, Leningrad, 1954 (RZhKhim, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutitons (13)
SO: Sum. No. 598, 29 Jul 55

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, SH. L.

SEDLIS, V.I.; LEL'CHUK, Sh.L.

[redacted]

Calculation method for determining the indexes of physical and mechanical properties of plasticized polyvinyl chloride compositions. (MLRA 10:6)

Zav. lab. 23 no.3:329-332 '57.

1. Nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass. (Plastics) (Ethylene)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, SH. L.

15

6

Correlation of the effects of plasticizers on the properties of poly(vinyl chloride). Sh. L. Lel'chuk and V. I. Sedlis (Sci.-Research Inst. Polymerizer Plastics, Leningrad). Zhur. Prikl. Khim. 30, 412-19(1957).—It was discovered that the properties of a plasticized poly(vinyl chloride) (I) could be correlated with the lowering of the vitrification temp. ΔT_v caused by 1 mol. % of the plasticizer. This property of the plasticizer was designed as its "no. of effectiveness" E, i.e. $\Delta T_v = T_v^1 - T_v^2 = E$ where T_v^1 and T_v^2 are the temps. of the glassy state formation before and after plasticization. The value of E of the following were detd.: tritolyl phosphate 9.4, diethyl phthalate 9.8, dibutyl phthalate 10.6, dioctyl phthalate 11.9, dibutyl adipate 12.4, dioctyl adipate 13.1, dibutyl sebacate 13.8, and dioctyl sebacate 18.1. E is a function of the structure of the plasticizers and can be calcd. by $E = 0.22m + 9.2$ where m is the no. of C atoms in the primary chain of the plasticizer. A linear relation was found: property $= aE + b$ where a and b are coeffs. Such properties as the tensile strength δ, elongation at rupture Δl, heat capacity T_c, moisture permeability P, and others were given by the following relations: $\delta = \delta_0/0.8n(0.3E - 1.84)$ kg./sq. cm.; $\Delta l = \Delta L_0 (3.4n - 8.4)(0.19E - 0.7)\%$; $T_c = T_v - nE$; $P = (0.9n - 1.7)(0.265E - 2.126)$ g./cm. hr. mm. Hg (n = mol. % of I in the polymer). The calcd. and exptl. values were in good agreement. The equivalence of different plasticizers was given by $n_2 = [n_1 - 6.4(K - 1)]K$ where $K = E_2/E_1$.

I. Bencowitz

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LEL'CHUK, SH. L.

16

Effect of plasticizers on the properties of poly(vinyl chloride)/5 II. Moisture permeability of plasticized compositions. Sh. L. Lel'chuk and V. I. Sedlis (Sci. Research Inst., Polymerized Plastics, Leningrad). *Zhur. Prikladnoi Khim.* 30, 1041-9(1957); cf. *C.A.* 51, 12530*d*.—The effect of different plasticizers on the moisture permeability P of poly(vinyl chloride) (I) films was studied. $P = Qd/S\Delta pt$, g./cm. hr. mm. Hg, was correlated with the "effectiveness no." E (*loc. cit.*) of the plasticizer; Q is the amt. of H_2O diffused through the membrane of thickness d, in cm., and surface S, in sq. cm., over a period t, in min., at a pressure difference Δp on both sides of the film. The mole % of plasticizer added to $(CH_2:CHCl)_n$ $n = w/62.5/M$, where w and M are the wt. and the mol. wt. of plasticizer added. The values of the temp. of vitrification T_v, E for 1 mole % and $P \times 10^4$ for $n = 4$, 8, and 12 mole % at 20° were as follows: tritolyl phosphate, 55.6, 9.4, 0.55, 0.92, 2.96; diethyl phthalate, 55.2, 6.8, 0.58, 1.18, 3.38; dibutyl phthalate, 54.4, 10.6, 0.60, 1.33, 4.02; dioctyl phthalate, 53.1, 11.9, 0.64, 1.98, 4.97; dibutyl adipate, 52.6, 12.4, 0.97, 2.67, 5.89; dioctyl adipate 51.9, 13.1, 1.45, 4.62, 10.35; dibutyl sebacate, 52.2, 13.8, 1.09, 3.30, 8.64; dioctyl sebacate, 49.9, 15.1, 1.64, 5.32, 12.05. Empirically, the data were expressed by $P = P_0(0.0n - 1.7)(0.265E - 2.120)$ and $P_T = 1.5^A P_m$, where P_0, P_T, and P_m are the permeabilities of I without any plasticizer ($P_0 = 0.5 \times 10^{-4}$), that at any temp. T, and at 20°, resp.; $A = (T - 20)/10$. I. B.

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1-4E2c (j)
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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

BOGUSHEVSKIY, L.L.; LEL'CHUK, Sh.L.; FADEYEVA, A.V.; PESIN, L.M., kand. tekhn. nauk, nauchnyy red.; SHEVCHENKO, G.A., tekhn. red.

[Transparent films for packing food products; production abroad] Prozrachnye plenki dlia upakovki pishchevoi produktsii; sostoianie proizvodstva za rubezhom. Moskva, Vses. in-t nauchn. i tekhn. informatsii, 1958. 29 p. (MIRA 14:7)
(Food--Packaging) (Plastics)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Sh.L.; SEDLIS, V.I.

Effect of plasticizers on the properties of polyvinylchloride [third report]. Zhur. prikl. khim. v. 31 no.5:790-799 My '58. (MIRA 11:6)
(Plastics) (Vinyl compounds) (Plasticizers)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Sh.L.; SEDLIS, V.I.

Viscosity of polyvinylchloride mixtures as dependent on effectiveness of plasticizers. Zhur. prikl. khim. 31 no.9: 1397-1402 S '58. (MIRA 11:10)

1.Leningradskiy nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass.
(Ethylene) (Viscosity) (Plasticizers)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

FADEYEVA, A.V.; LEL'CHUK, Sh.L.; SHCHERBAK, P.N.; KURZHENKOVA, M.S.; SERGUN'KO, A.M.; KOSOVOVA, Z.P.

Method for preventing the accumulation of an electric charge in polyethylene films during their formation. Plast. massy no.3:27-30 '63. (MIRA 16:4)

(Polyethylene—Electric properties)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

VORONIN, F.S., kand.tekhn.nauk; LEL'CHUK, V.D., kand.fiziko-matem.nauk

Heat transfer from a gas to a wall during turbulent flow within a pipe. Teploenergetika 10 no.4:61-66 Ap '63. (MIRA 16:3)

1. Vsesoyuznyy teplotekhnicheskiy institut.
(Heat—Transmission) (Fluid dynamics)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

PROCESSES AND PROPERTIES INDEX

5A

458. **Resistance to Flow of a Gas in a Smooth Circular Pipe of Constant Cross-Section.** V. Leichuk. *Techn. Phys., U.S.S.R.* 4, 8, pp. 592–621, 1937. *In German.*—The resistance to the flow of superheated steam through a thermally insulated pipe was investigated experimentally with velocities of flow comparable with the velocity of sound and at Reynolds numbers between $2 \cdot 5 \times 10^5$ and 8×10^5. The steam entered the test length of pipe (inner diameter 20 mm., length 1500 mm.) at a pressure of 6 atm. The velocity was altered from 280 m./sec. to 600 m./sec. the velocity of sound being reached at the end of the pipe. An 'inlet' length between 26 and 35 diameters was found necessary. The influence of entry conditions was studied, pressure measurements being made with a rounded entry, a sharp entry, and an artificially constricted entry. The type of entry has little effect except on the 'inlet' length. The local resistance coefficient λ at any section of the pipe is found not to depend on the ratio of the velocity to the velocity of sound, and to depend on the Reynolds number in the same way as for an incompressible fluid. From the constancy of λ the pressure drop along the pipe can be calculated. S. G.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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CA

4

Chromium-plating of the inside surface of pipes. V. I. Lel'chuk and D. L. Timrot. *Korrozya i Borba s Nei* 5, No. 5-6, 34-7(1939).—For expts. on the detn. of heat exchange and frictional resistance in pipes during rapid flow of superheated steam at 400°, it was necessary to protect the inside wall of the pipes from corrosion. Cr-plating was applied successfully. In order to establish good circulation of the electrolyte the pipe itself had to serve as electrolyte container. Circulation was in a closed circuit. An Fe rod (anode) passed through the axis of the pipe was fastened at each end by means of insulated fittings. An air lift was used to circulate the electrolyte through the pipe. The H_2 evolved, together with the compressed air, escaped at the upper end. The speed was regulated by regulating the pressure of the air lift and the temp. was kept at 45° by means of an elec. heater. Electrolyte was fed into the system after the current was turned on, the air let in, and the temp. raised to 50°. Electrolysis was continued for 1 hr., then the electrolyte was removed and the pipe disconnected and washed with water. This method gave excellent results; the pipe after 1 year's use under above conditions was free from rust. C. S. S.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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AER

Government Publications

Heat Transfer and Hydraulic Flow Resistance for Streams of High Velocity. V. L. Lelchuk. (Translation received from Massachusetts Institute of Technology, from Jour. Tech. Phys. (U.S.S.R.), Vol. IX, No. 9, 1939.) Problems of hydraulic flow resistance and heat transfer for streams with velocities comparable with acoustic velocities have great importance for various fields of technical science. Especially, they have great importance for the field of heat transfer in designing and constructing boilers of the "Velox" type. In this article a description of experiments and their results with regard to definition of the laws of heat transfer in differential form for high velocity air streams inside smooth tubes are given. N.A.C.A. T.M. No. 1054, December, 1943.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, V. L.

USSR/Engineering - Heat Transfer Apr 52

"On Heat Transfer From High-Pressure Superheated Steam Inside of Intertubular Space," V.L. Lel'-chuk, Cand Physicomath Sci, Lab of Tech Phys

"Iz v-s Teplotekh Inst" No 4, pp 18-21

Experimentally establishes that heat transfer process in case of superheated steam flowing inside of cylindrical gap between 2 pipes is in good agreement with low established for steam flow in pipe up to very high values of Re (1,750,000 for pipes and 1,000,000 for gap). Discusses results obtained by American investigators W.H. McAdams and assocs ("Trans of ASME" Vol 72, No 4, 1950). 216T47

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, V. L.

Gases, Flow of

"Principles of heat exchange in high-velocity flow of gases." A.A. Gukhman, N. V. Ilyukhin. Reviewed by V.L Lel'chuk. Izv. VTI, 21, No. 7, 1952.

Monthly List of Russian Accessions, Library of Congress, Oct. 1952. Unclassified

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, V.L.

SHIROKOV, Mikhail Fedorovich; LEL'CHUK, V.L., red.; KOLESNIKOVA, A.P., tekhn.red.

[Physical principles of gas dynamics and their application to processes of heat exchange and friction] Fizicheskie osnovy gazodinamiki i primeneniia ee k protsessam teploobmena i treniia. Moskva, Gos.izd-vo fiziko-matematicheskoi lit-ry, 1958. 340 p. (MIRA 11:7)
(Gases, Kinetic theory of)
(Heat exchangers) (Friction)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

KUTATELADZE, Samson Semenovich; BORISHANSKIY, Veniamin Mironovich; MOCHAN, S.I., RED.: ARMAND, A.A., retsenzent; BERMAN, L.D., retsenzent; DOROSHCHUK, V.Ye., retsenzent; LEL'CHUK, V.G., retsenzent; PIROGOV, M.S., retsenzent; RYVKIN, S.A., retsenzent; SOKOLOV, Ye.Ya., retsenzent; ZABRODINA, A.A., tekhn.red.; LARIONOV, G.Ye., tekhn.red.

[Handbook on heat transmission] Spravochnik po teploperedache. Leningrad, Gos. energ. izd-vo, 1958. 414 p. (MIRA 12:1)
(Heat--Transmission)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

Lel'chuk, V.L.

96-1-31/31

AUTHOR: Lel'chuk, V.L., Candidate of Physico-Mathematical Sciences.

TITLE: Concerning the Article by G.E. Zarnitskiy "On the Calculation of Heat Transfer from Condensing Steam to an Externally-sloping Heat Exchange Surface" (O stat'ye G.E. Zarnitskogo "K voprosu rascheta teplootdachi ot kondensiruyushchegosya para k vneshnenaklonnoy poverkhnosti teploobmena")

PERIODICAL: Teploenergetika, 1958, Vol.5, No.1, p. 96 (USSR).

ABSTRACT : This is a brief note on an article in Trudy Krasnodarskogo Instituta Pishchevoy Promyshlennosti, No.14, 1956. It is stated that the author is wrong on the two fundamental points upon which his whole article depends.
There is 1 Slavic reference.

AVAILABLE: Library of Congress.

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

SOV/96-58-9-16/21

AUTHORS: Dyadyakin, D.V. (Engineer) and Lel'chuk, V.L. (Candidate of Phys.Math. Sciences)

TITLE: Heat-transfer from the Walls to a Turbulent Flow of Air in a Tube with Large Temperature Differences, and a Method of Calculating the Wall Temperature (Teplootdacha ot stenki k turbulentnomu potoku vozdukha vnutri truby pri bol'shikh temperaturnykh naporakh i raschet temperatury stenki)

PERIODICAL: Teploenergetika, 1958, Nr 9, pp 74 - 79 (USSR)

ABSTRACT: This article describes work undertaken to determine local heat-transfer coefficients and tube wall-temperatures when gas flows inside a strongly heated tube. The tests were carried out with a turbulent flow of air in a tube of steel Kh-18-N9T of 17.82 mm internal diameter, 2620 mm long, the tube being heated electrically. The measures necessary to ensure good thermal insulation of the tube and reliable determination of local thermal losses are described, also the instrumentation. Five series of tests were made with mean wall-temperatures ranging from 160 - 800°C. The maximum wall-temperature was 1,094°C. The inlet-air temperature was always 15 - 28°C and the

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SOV/96-58-9-16/21

Heat-transfer from the Walls to a Turbulent Flow of Air in a Tube with large Temperature Differences, and a Method of Calculating the Wall Temperature

outlet temperature did not exceed 579°C. The Reynolds number at the inlet section ranged from 1×10^5 to 6.4×10^5 and the Mach number from 0.34 - 0.65. The equations used to calculate the flow characteristics and local heat-transfer coefficients are given. The amount of heat generated per unit length of tube increased somewhat in the direction of flow, due to electric heater's increase of specific resistance with temperature. Changes in the local and mean heat-transfer coefficients along the length of the tube for certain conditions are shown in Fig 1. The test data obtained are compared with those of other authors and it will be seen from Fig 2 that agreement with Il'in's work is good but that the NACA report of 1951 gives lower results. However, within the range of Reynolds numbers 25,000 - 400,000 formula 6 is accurate enough. Formulae 7 and 8 represent the experimental data for local heat-transfer coefficients and mean coefficients to within ± 5%. In Figs 4 and 5, all the experimental data on local

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SOV/96-58-9-16/21

Heat-transfer from the Walls to a Turbulent Flow of Air in a Tube with large Temperature Differences, and a Method of Calculating the Wall Temperature

and mean heat transfer coefficients are compared with formulae 7 and 8. It will be seen that the formulae are generally applicable and that they represent the experimental results with considerable accuracy. This is important, because when the wall temperature is very high and the temperature drop from the wall to the gas is also high, a relatively small error in determination of the temperature difference may lead to the tube running dangerously hot. The article provides a simple method

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SOV/96-58-9-16/21

Heat-transfer from the Walls to a Turbulent Flow of Air in a Tube with large Temperature Differences, and a Method of Calculating the Wall Temperature

of calculating the change of wall temperature along the length of a tube with the given thermal load distribution and given gas conditions at inlet.

There are 6 figures, 5 literature references (3 Soviet, 2 English)

ASSOCIATION: Vsesoyuznyy teplotekhnicheskiy institut (All-Union Thermo-technical Institute)

1. Gas flow--Thermodynamic properties 2. Heat transfer--Mathematical analysis 3. Temperature--Determination 4. Mathematics--Applications

Card 4/4

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

Lel'chuk, V.L.

24(8) PHASE I BOOK EXPLOITATION SOV/3459

Moscow. Vsesoyuznyy teplotekhnicheskiy institut

Teploobmen pri vysokikh teplovykh nagruzkakh i drugikh spetsial'nykh usloviyakh; sbornik statey (Heat Exchange Under High Thermal Loads and Other Special Conditions; Collection of Articles) Moscow, Gosenergoizdat, 1959. 135 p. 4,000 copies printed.

Ed. (Title page): A. A. Armand; Ed. (inside book): I. K. Korikovskiy; Tech. Ed.: G. I. Matveyev.

PURPOSE: The book is intended for personnel of scientific research institutes, planning and design organizations, and for power engineers.

COVERAGE: This collection of 9 articles presents the results of research conducted at the All-Union Heat Engineering Institute. Problems of heat exchange under high pressure and other special conditions are analyzed. Attention is devoted to special cases such as heat exchange from wall to water, including cases of ordinary and surface boiling; heat transfer to steam and water under supercritical parameters; heat exchange from pipe wall to gas under high pressure; and the hydraulic resistance of a heated tube. References are given at the end of each article.

2. Doroshchuk, V. Ye., and F. P. Frid. Investigation of Critical Heat Loads 23

3. Doroshchuk, V. Ye., V. L. Lel'chuk, and V. V. Modnikova. Heat Emission to Water Under High Pressure 30

4. Armand A. A., N. V. Tarasova, and A. S. Kon'kov. Investigation of Heat Emission From Wall to Steam Near the Critical State 41

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6. Dyadyakin B. V., and V. L. Lel'chuk. Experimental Investigation of Heat Emission From Tube Wall to Gas at High Temperature 69

7. Lel'chuk, V. L., and B. V. Dyadyakin. Experimental Determination of Hydraulic Resistance With Turbulent Flow of Air in a Heated Tube 91

8. Doroshchuk, V. Ye., and F. P. Frid. Investigation of Heat Emission in Annular Channels 101

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AVAILABLE: Library of Congress (QC320.M68)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, V.L.

24(8) PHASE I BOOK EXPLOITATION SOV/3501

Akademiya nauk SSSR. Energeticheskiy institut

Voprosy teploobmena (Heat-Exchange Problems) Moscow, 1959. 237 p. Errata slip inserted. 2,800 copies printed.

Resp. Ed.: M.A. Mikheyev, Academician; Ed. of Publishing House: G.B. Gorshkov; Tech. Ed.: I.F. Kuz'min.

PURPOSE: This collection of articles is intended for scientific workers, engineers, and postgraduate students specializing in thermodynamics.

COVERAGE: The collection reviews problems of heat transfer and explores possibilities of intensifing heat exchange. The heat exchange theory is outlined, and Russian scientists who contributed to its development are mentioned. Thermophysical properties of some molten metals and alloys are analyzed, and methods used to determine them presented. Equipment used for measuring thermal conductivity, heat capacity, and kinetic viscosity of these metals are discussed. Results of experimental study of the intensified heat exchange for a water flow in an annular channel are analyzed and the instruments used along with the pilot plant for studying convection heat exchange in contacting nonmiscible fluids are described. Instruments and equipment used for determining the linear expansion of metals, the consumption of a liquid, and the absorption capacity of a surface are also described and illustrated. A number of equations for solving various thermodynamic problems are presented. Each article is accompanied by references, the majority of which are Soviet.

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SOV/96-60-1-11/22

24.5200

AUTHOR: Lel'chuk, V. L., Candidate of Physico-Mathematical Sciences

TITLE: The Steady-state Temperature Distribution Across the Wall of a Cylindrical Pipe Heated Within the Wall

PERIODICAL: Teploenergetika, 1960, Nr 1, pp 54-55 (USSR)

ABSTRACT: Formulae have been published for the temperature distribution in the wall of a body when heat is uniformly distributed within the wall, for example by the passage of electric current. The formulae relate to the case when all the heat is removed externally through one boundary surface. This article considers the problem when the generated heat is removed through both surfaces of the tube, as may be the case when cooling hollow conductors, heat-generating elements in atomic piles and other equipment. In this case, zero gradient and maximum temperature occurs somewhere in the wall of the pipe. The differential equation of thermal conductivity in a hollow cylinder containing a uniformly-distributed heat source is given by expression (1) and the boundary conditions by expression (2). From these, Eq (7) is derived for the temperature profile in the wall

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The Steady-state Temperature Distribution Across the Wall of a Cylindrical Pipe Heated Within the Wall

and formulae (8) and (9) for the temperature of the inner surface and the maximum temperature. If only the outer surface is cooled, the temperature distribution is given by expression (10); if only the inner surface, by expression (11). The coefficient of thermal conductivity often varies in a linear manner with temperature, as in expression (12); then the temperature distribution is given by expression (13), from which the maximum and other temperatures may easily be calculated. There are 1 figure and 3 Soviet references.

ASSOCIATION: Vsesoyuznyy teplotekhnicheskiy institut (All-Union Thermo-Technical Institute)

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Translation from: Referativnyy zhurnal, Mekhanika, 1960, No. 12, p. 141, # 16294

AUTHORS: Lel'chuk, V.L.; Dyadyakin, B.V.

TITLE: The Heat Emission From the Wall to a Turbulent Air Stream Within a Pipe and the Hydraulic Resistance at High Temperature Pressures

PERIODICAL: V sb.: Vopr. teploobmena. Moscow, AN SSSR, 1959, pp. 123-192

TEXT: An experimental investigation was conducted on the effect of the temperature factor on the heat exchange and resistance at the turbulent air stream in pipes. The authors present in their article a detailed description of the experimental method and the experimental unit. The experiments were conducted with a pipe of 17.82 mm in diameter and 2,620 mm length. The pipe was heated by direct current supplied to its ends. The wall temperature was measured by thermocouples applied to the external surface and insulated from the pipe wall by thin mica layers. For measuring the hydraulic resistance, the pipe had 14 bores for sampling the statical pressure. The R-number range ran from 1.17 x 105 to 6.45 x 105, that of the temperature factor T_{st}/T from 1 to 2.5. As an experimental result, an empirical formula was obtained taking into account the temperature factor effect:

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The Heat Emission From the Wall to a Turbulent Air Stream Within a Pipe and the Hydraulic Resistance at High Temperature Pressures

$$N = c\, R^m P^{0.4} \left(\frac{T}{T_{st}}\right)^p,$$

where c, m, and p are functions of x/D; the author propose to adopt their values from the graphs presented. According to the expectations, the values of c and m remain practically constant and equal to 0.025 and 0.8 respectively for x/D > 10. But the dependence of exponent p on x/D is preserved over the entire length of the pipe up to x/D = 133. In other words, the authors state that no thermal stabilization is observed at the heating of a gas in pipes at great temperature differences. The latter circumstance is unexpected. Besides the measurement of heat emission, the investigation was conducted of the temperature factor effect on the hydraulic resistance. As a result it was obtained that the local resistance coefficient is

$$\xi = \frac{0.19}{R^{0.2}} \left(\frac{T}{T_{st}}\right)^j,$$

where exponent j = f(x/D) varies from -0.16 to +0.16 with the variation of x/D from

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

BORISHANSKIY, V.M., red.; KUTATELADZE, S.S., red.; LEL'CHUK, V.L., red.; NOVIKOV, I.I., red.; ROMANOVA, L.A., red.; MAZEL', Ye.I., tekhn. red.

[Liquid metals] Zhidkie metally; sbornik statei. Moskva, Gosatomizdat, 1963. 326 p. (MIRA 16:12)
(Liquid metals—Thermal properties)

APPROVED FOR RELEASE: 07/1

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, V.L.; YELFIMOV, G.I.

Heat transfer from a wall to a turbulent flow of carbon dioxide in a round tube at high thermal loads. Inzh.-fiz. zhur. no.12: 11-14 D '63. (MIRA 17:2)

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LELCHUK, V. L.; YELFIMOV, G. I.; FEDOTOV, Yu. P.

"Experimental investigation of heat transfer from a tube wall to monatomic, diatomic, and triatomic gases at high temperature differences."

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

Dzerzhinskiy All-Union Heat Technology Inst.

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

S/0294/64/002/002/0243/0249

ACCESSION NR: AP4038439

AUTHORS: Lel'chuk, V. L.; Yelfimov, G. I.

TITLE: Heat transfer to a turbulent stream of argon inside a tube at large temperature stresses and high wall temperatures

SOURCE: Teplofizika vy*sokikh temperatur, v. 2, no. 2, 1964, 243-249

TOPIC TAGS: heat transfer, heat exchange, thermal stress, Prandtl number, Reynolds number, density, Nusselt number

ABSTRACT: In view of the importance of sufficiently exact data on local heat transfer from the wall of a highly stressed heat exchanger to the gas, tests were made of heat transfer to argon at turbulent flow in a tube. The inlet Reynolds number ranged from 39 to 60 x 10^3, the Mach number reached 1.0, and the wall temperature was of the order of 1270K. The experimental tube was made of 1Kh18N9T stainless steel (1205 mm long, 11.39 mm i.d.) heated electrically. All the

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ACCESSION NR: AP4038439

experimental data in the stabilized heat exchange region fit the empirical formula $Nu_{st} = 0.022\ Re_{st}^{0.8} Pr_{st}^{0.4}$, with a scatter of ±6%. With allowance for all corrections, the experimental data fit the empirical formula

$$Nu_{st} = b_{st}^{0.8}\ Pr_{st}^{0.4}\ (T/T_{st})^{n_{st}}$$

in which the physical quantities, including the density, are calculated from the wall temperature; a plot is given for the exponent n_{st}. The proportionality coefficient b_{st} can be represented with a high degree of accuracy by the following formulas:

$$b_{st} = 0{,}0387\,(x/d)^{-0{,}100} \quad \text{for} \quad 1 \leqslant x/d \leqslant 16{,}7$$
$$b_{st} = 0{,}0244\,(x/d)^{-0{,}033} \quad \text{for} \quad 16{,}7 < x/d \leqslant 50$$
$$b_{st} = 0{,}0213 \quad \text{for} \quad x/d > 50.$$

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ACCESSION NR: AP4038439

The deviation between the empirical formula and the experimental data does not exceed ±5%. Orig. art. has: 6 formulas and 4 figures.

ASSOCIATION: Vsesoyuzny*y teplotekhnicheskiy nauchno-issledovatel'skiy institut im. F. E. Dzerzhinskogo (All-Union Heat Engineering Scientific Research Institute)

SUBMITTED: 06Dec63 DATE ACQ: 09Jun64 ENCL: 02

SUB CODE: ME, TD NR REF SOV: 001 OTHER: 001

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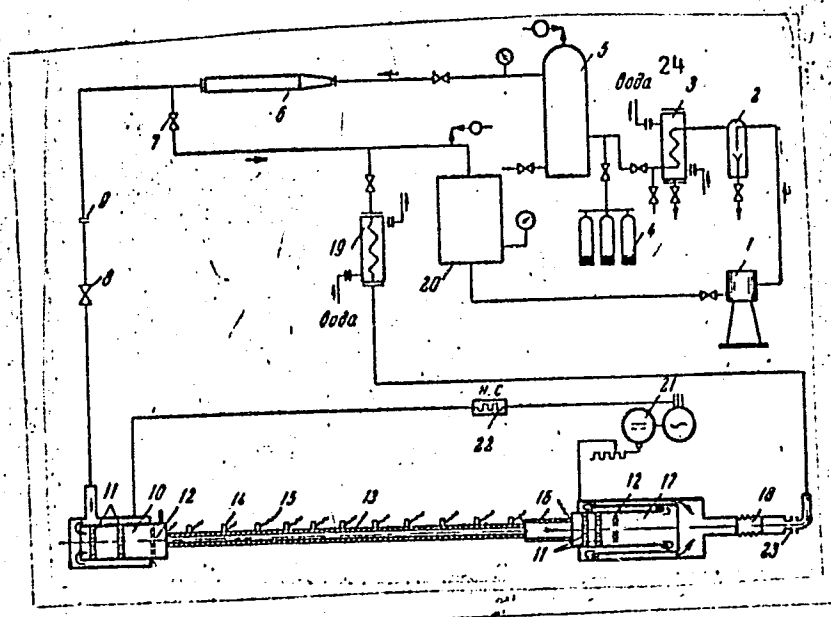

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ACC NR: AT6001347 SOURCE CODE: UR/0000/65/000/000/0015/0024

56
B+1

AUTHOR: Lel'chuk, V. L.; Yelfimov, G. I.; Fedotov, Yu. P.

ORG: All-Union "Order of the Red Banner of Labor" Institute of Heat Engineering im. F. E. Dzerzhinskiy (Vsesoyuznyy ordena Trudovogo Krasnogo Znameni teplotekhnicheskiy institut)

21,44,55

TITLE: Experimental study of heat transfer from a tube wall to one-, two-, or three-atomic gases at high temperature gradients

SOURCE: Teplo- i massoperenos. t. I: Konvektivnyy teploobmen v odnorodnoy srede (Heat and mass transfer. v. 1: Convective heat exchange in a homogeneous medium). Minsk, Nauka i tekhnika, 1965, 15-24

TOPIC TAGS: heat transfer, propulsion

ABSTRACT: The heat transfer from a tube wall to air, argon, or carbon dioxide was studied at gas temperatures from 300—870K and at Re numbers of 14×10^3—684×10^3. Steel tubes 11.39—12.25 mm in diameter having wall temperatures of 670—1270K were used at flow Mach numbers up to 1. The following relationship was derived for all of the investigated gases:

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L 13457-66

ACC NR: AT6001347

$$Nu_w = 0{,}021\ Re_w^{0.8} Pr_w^{0.4} \pm 10\%,$$

where

$$Re_w = \frac{\rho_w W d}{\mu_w};$$

(ρ is density; W is velocity; d, diameter; and μ, viscosity). In terms of temperatures, the flow parameters can be correlated by the following formula:

$$Nu_f = 0{,}021\ Re_f^{0.8} Pr_f^{0.4} \frac{T_f}{\sqrt{T_0 T_w}},$$

where T_f is the free stream temperature; T_w, wall temperature; and T_0, stagnation temperature. The subscript w refers to the parameters on the wall. Orig. art. has: 7 formulas and 2 figures. [PV]

SUB CODE: 21/ SUBM DATE: 31Aug65/ ORIG REF: 006/ OTH REF: 002/

ATD PRESS: 4187

Card 2/2

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

SOV-3-58-8-21/26

AUTHOR: Lel'chuk, V.S.

TITLE: Training of Engineering and Scientific Personnel of the Chemical Industry During the First Five-Year Plan (Podgotovka inzhenernykh i nauchnykh kadrov khimicheskoy promyshlennosti v period pervoy pyatiletki)

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 8, pp 78 - 83 (USSR)

ABSTRACT: The article deals with the development of the USSR chemical industry and the training of the required personnel which began in 1928 and was continued by the First 5-year Plan in 1929. In 1930, new chemical vuzes and departments were opened in Moscow, the Ukraine, in the Urals, Siberia, in the Volga Region and the Far East. During the period 1930 - 1936, 15,000 specialists of chemistry graduated from industrial vuzes and 50 state grants were issued to those young academicians who had distinguished themselves. Among the recipients were the academicians B.A. Arbuzov, V.A. Kargin, A.N. Nesmeyanov and Associate Members of the USSR AS, S.Z. Roginskiy, D.L. Talmud and others. There are 36 Soviet references.

Card 1/1

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

BLINOV, V.P.; LEL'CHUK, V.S., nauchnyy sotr.; ROGACHEVSKAYA, L.S., nauch.sotr.; POLYAKOV, Yu.A., otv.red.; KIND, T.B., red.izd-va; GUS'KOVA, O.M., tekhn.red.

[Those who are at the forefront; an account on the movement for communist labor in the Oktyabr'skiy District of Moscow] O tekh, kto idet vperedi; rasskaz o dvizhenii za kommunisticheskii trud v Oktiabr'skom raione Moskvy. Moskva, Izd-vo Akad. nauk SSSR, 1961. 94 p. (MIRA 14:11)

1. Zaveduyushchiy otdelom propagandy i agitatsii Oktyabr'skogo rayonnogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza (for Blinov).
2. Institut istorii AN SSSR (for Lel'chuk, Rogachevskaya).
(Moscow—Efficiency, Industrial).

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Vitaliy Semenovich, kand.istor.nauk; BEYLINA, Yevgeniya Eliberovna; YEREMINA, Yu.F., red.; NAZAROVA, A.S., tekhn.red.

[Where communism begins; the CPSU is the organizer and leader of the people's movement for communist labor] Tam, gde nachinaetsia kommunizm; KPSS - organizator i rukovoditel' vsenarodnogo dvizheniia za kommunisticheskii trud. Moskva, Izd-vo "Znanie," 1961. 47 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.1, Istoriia, no.23). (MIRA 14:12)

(Labor and laboring classes)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

DMITRENKO, Vladimir Petrovich; LEL'CHUK, Vitaliy Semenovich; OSTAPENKO, Ivan Prokof'yevich; ROGACHEVSKAYA, Lyudmila Solomonovna; BOGDANOVA, N., red.; SHLYK, M., tekhn. red.

[The flower and pride of the working class; the structure of the collectives of communist labor]TSvet i gordost' rabochego klassa; o sostave kollektivov kommunisticheskogo truda. Moskva, Mosk. rabochii, 1962. 85 p. (MIRA 16:1)

1. Nauchnyye rabotniki Instituta istorii Akademii nauk SSSR (for Dmitrenko, Lel'chuk, Ostapenko, Rogachevskaya)
(Moscow--Socialist competition)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

ZEL'CHUK, Vitaliy Semenovich; POLETAYEV, V.Ye., otv. red.; ZEL'KIN, I.I., red.izd-va; VOLKOVA, V.V., tekhn.red.; RYLINA, Yu.V., tekhn. red.

[Creating the chemical industry in the U.S.S.R.; from the history of socialist industrialization] Sozdanie khimicheskoi promyshlennosti SSSR; iz istorii sotsialisticheskoi industrializatsii. Moskva, Izd-vo "Nauka," 1964. 381 p. (MIRA 17:3)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Ye.P., inzhener

Light flicker in the electrode zone of fluerescent lamps. Svetotekhnika 1 no.5:24-25 O'55. (MLRA 8:12)

1. Rostovskiy institut inzhenerov zheleznodorozhnogo transporta
(Fluorescent lamps)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

2

CA

Solubility relations at 25° in the system $NaF-AlF_3-H_2O$.
I. V. Tananaev and Yu. L. Lel'chuk. *Compt. rend. acad. sci. U. R. S. S.* 41, 114-16(1943).—See *C. A.* 38, 3543[1].
E. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

CA

Solubility relations at 25° in the system NaF-AlF$_3$-H$_2$O. (The chemical composition of cryolite.) I. V. Tananaev and Yu. L. Lel'chuk. *Doklady Akad. Nauk S. S. S. R.* **41**, 118-20(1943).—A satd. aq. soln. of AlF$_3$ (I) was treated with increasing amts. of NaF, shaken for 8-12 hrs. at 25° and both the pptd. solid and the supernatant solns. were analyzed. As the concn. of NaF in the soln. increased from 0.030% to 1.30% the concn. of I in the soln. decreased from 0.303% to less than 0.001%. As long as the concn. of NaF was less than 1.4%, the compn. of the pptd. solid corresponded to 11NaF.4AlF$_3$ (cf. *C. A.* **32**, 2046[7]); at concns. of NaF greater than 1.4% the solid phase was 3NaF.AlF$_3$. Results of analysis of 3 samples of natural cryolite agreed with the formula 11NaF.4AlF$_3$. This formula was confirmed by identity of the phenomena observed on heating the synthetic and the natural cryolite samples (transition from monoclinic to cubic cryst. form at 500°, m. 1040°). The possibility of analytically detg. Al as 11NaF.4AlF$_3$ by pptn. with NaF is pointed out (cf. *C. A.* **33**, 9185[1]). J. W. Perry

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

CA

Physicochemical analyses of a system important in analytical chemistry. System AlF_3—NaF—H_2O). I. V. Tananaev and Yu. L. Lel'chuk. *Zhur. Anal. Khim.* 2, 93-102(1947); cf. *C.A.* 43, 6326f.—When NaF is added to satd. solns. of AlF_3, two double salts can be formed. The more stable salt is $11NaF.4AlF_3$. It predominates with low concns. of NaF and the other salt, $3NaF.AlF_3$, appears at higher concns. of NaF but in dil. solns. is hydrolyzed into the more stable salt. Considerable data are given to prove that the formula of cryolite is really that of the first salt and not Na_3AlF_6 as has been assumed. In this form Al^{3+} can be pptd. from fluoride solns. and sepd. from most other ions in quant. analysis.

M. Hosch

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

CA

Chin Inorg. Chem.,

Solubility of silver bromate in electrolyte solutions. I. The system silver bromate-alkaline earth metal nitrate-water. I. V. Tananaev, Yu. L. Lel'chuk, and B. Kh. Petrovitskaya (White-Russ. Polytech. Inst., Minsk). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 1207-15 (1949); cf. *C.A.* 41, 2629a.—Data for $M(NO_3)_2$ solns. (M = Mg, Ca, Sr, Ba) of $AgBrO_3$ at 25° at nitrate concns. up to 1 M are tabulated, giving the concn. of $M(NO_3)_2$, the molarity of $AgBrO_3$ in satd. soln., ionic strength μ, activity coeff. γ, soly. product $L\rho$, activity product La, and activity a. The calcns. are based on the following relations: $[Ag^+] \times [BrO_3^-]\gamma^2 = L\rho_{AgBrO_3}\gamma^2 = La_{AgBrO_3}$; $\gamma = \sqrt{La/L\rho}$; $-\log \gamma = 0.505\sqrt{\mu}/(1 + 0.33a\sqrt{\mu})$. The soly. of $AgBrO_3$ increases with increasing nitrate concn., the increase being most pronounced at high nitrate concns. The cations enhance the soly. in the order Mg < Ca < Sr < Ba, but a decreases in this same order, e.g. in 0.3 M soln. from 3.37 to 1.90, in 1 M soln. from 2.41 to 1.80. La is not entirely const., it has a min. for $M(NO_3)_2$ concns. in the region from 0.1 to 0.3 M. A plot of a against the ionic radii r of the cations gave an almost straight line. The soly. S_{AgBrO_3} was calcd. from $\sqrt{La/\gamma^2}$, where La (assumed to be const., as a simplification), is 5.5×10^{-4}; γ may be calcd. from $-\log \gamma = 0.505\sqrt{\mu}/(1 + 0.33a\sqrt{\mu})$, where a is the av. (= 2.1) of values obtained for the 4 cations in 1 M solns. $S_{AgBrO_3} \times 10^3$ for 0.3 M Mg, Ca, Sr, and Ba nitrates is 1.27, 1.33, 1.43, 1.49; for 1 M solns. 1.73, 1.81, 1.84, —. The soly. in H_2O at 25° is 0.1948 g./100 ml.; values by 10 other authors are given.

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2

CA

Solubility of cryolite in salts of some organic acids. Yu. L. Lel'chuk and B. I. Rutskaya. *Zhur. Prikhlad. Khim.* (J. Applied Chem.) 22, 499-503(1949).—Solubilities of the double salts 11NaF.4AlF$_3$ (I) (*C.A.* 43, 5695e) and 5NaF.2FeF$_3$ (II) (Tananaev and Deichman, *C.A.* 40, 7038^8), prepd. by pptn. of the equiv. amts. of the simple salts, were detd. at 25°. In $Na_3C_6H_5O_7$ (citrate) 0.000, 0.01, 0.03, 0.3, 1.0 *M*, the soly. of I is 0.0469, 0.0570, 0.0794 (max.), 0.0630, 0.0200 %, that of II, 0.2551, 0.2869, —, 0.5040 (max.), 0.2216%. In $NaC_7H_5O_3$ (salicylate) 0.000, 0.001, 0.01, 0.1, 1.0 *M*, I 0.0469, —, 0.0597, 0.0528, 0.1181%, II, 0.2551, 0.2562, 0.2305, 0.2205, 0.3181%, i.e. practically const. up to 0.1 *M*, then increasing. In $Na_2C_2O_4$ (oxalate) 0.001, 0.01, 0.1 *M*, I 0.0481, 0.0660, 0.0946%, II, 0.2583, —, 0.0280%. In $(CH_2)_2(CO_2Na)_2$ (succinate) 0.001, 0.01, 0.1 *M*, I, —, 0.2820, 0.0147, II, 0.0788, 0.0525, 0.0224%, i.e. decreasing with increasing concn. The soly. is thus detd. by antagonism between complex formation and the salting-out effect. Differences of the solubilities of the double fluorides of Al and Fe are insufficient for a quant. sepn. of the 2 elements.

N. Thon

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Yu.L.

Solubility of silver bromate in aqueous solutions of zinc and cadmium nitrates. Zhur.ob.khim.25 no.7:1273-1277 Jl'55. (MLRA 8:12)

1. Tomskiy politekhnicheskiy institut
(Silver bromate) (Nitrates)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LeL'CHUK, Yu. L.

6
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3

Solubility of silver bromate in aqueous solutions of potassium bromate and sodium nitrate. The question of effect of electrolytes with common ions on the solubility and solubility product of the precipitate. Yu. L. Lel'chuk, L. V. Surnina, and V. I. Barkhatova. ~~J. Gen. Chem. U.S.S.R.~~ 25, 1641-6(1955)(Engl. translation).—See *C.A.* 50, 5369*i*.
B. M. R.

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Yu.L.; SURNINA, L.V.; BARKHATOVA, V.I.

Solubility of silver bromate in aqueous solutions of potassium bromate and sodium nitrate. Effect of electrolytes with similar ions on the solubility and solubility product of the precipitate. (MLRA 9:2)
Zhur.ob.khim. 25 no.9:1685-1693 S '55.

1.Tomskiy politekhnicheskiy institut imeni S.M.Kirova.
(Solubility) (Silver bromate)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

Lel'chuk Yu. L.

B-8

USSR/Thermodynamics - Thermochemistry. Equilibria.
Physical-Chemical Analysis. Phase Transitions.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18521

Author : Yu.L. Lel'chuk
Inst : Tomsk Polytechnical Institute
Title : Solubility Result of Silver Bromate in Solutions of Zinc and Cadmium Nitrates.

Orig Pub : Izv. Tomskogo politekhn. in-ta, 1956, 83, 189-196

Abstract : The solubility (C) of $AgBrO_3$ precipitate (I) in aqueous solutions of $Zn(NO_3)_2$ (II) and Cd $(NO_3)_2$ (III) at a concentration of foreign electrolytes of 0.001 to 1 mol/l at 25° was determined. It was found that C and the solubility result (L_p) of the precipitate I increased regularly in these systems together with the increase of the concentration of foreign electrolytes: C was 8.43×10^{-3} mol/l and L_p was 7.11×10^{-5} for 0.001 M of II, and for 1 M of two C was 1.93×10^{-2} mol/l and L_p was 3.72×10^{-4};

Card 1/2

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

SOV/78-3-11-5/23

AUTHOR: Lel'chuk, Yu. L.

TITLE: The Solubility of Silver Bromate in Aqueous Solutions of Sulfuric Acid and of Lithium-, Sodium-, and Potassium Sulfate (Rastvorimost' bromata serebra v vodnykh rastvorakh sernoy kisloty i sul'fatov litiya, natriya i kaliya)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1958, Vol 3, Nr 11, pp 2453 - 2457 (USSR)

ABSTRACT: The solubility in the systems $AgBrO_3 \cdot H_2SO_4 \cdot H_2O$, $AgBrO_3 \cdot Li_2SO_4 \cdot H_2O$, $AgBrO_3 \cdot Na_2SO_4 \cdot H_2O$ and $AgBrO_3 \cdot K_2SO_4 \cdot H_2O$ was investigated at a concentration of 0,001-1 mol/l of the sulfuric acid and the sulfates of lithium and sodium, and of up to 0,3 mol/l of potassium sulfate. The experimental results obtained are given in the tables 1 and 6. It was found that the solubility and the solubility product in these systems increase with an increase in concentration of the corresponding sulfates according to certain rules. Potassium sulfate exercises the greatest influence on the solubility of the pre-

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cipitate, sulfuric acid the smallest. In the case of an equal concentration of the nitrates and sulfates of the alkali metals the corresponding sulfates influence the solubility, the solubility product, and the activity coefficient of $AgBrO_3$ more than do the nitrates. By means of the formula

$$C_{AgBrO_3} = \sqrt{\frac{\Pi_a}{\gamma^2}} \quad \text{at } \Pi_a = 5{,}50 \cdot 10^{-5}$$

the solubility of silver bromate in the aqueous solutions of lithium sulfate, sodium sulfate, and potassium sulfate can be determined with greatest accuracy at any concentration in the range of 0,01 - 1 mol/l. There are 4 figures, 7 tables, and 6 references, 6 of which are Soviet.

ASSOCIATION: Tomskiy politekhnicheskiy institut im.S.M.Kirova (Tomsk Polytechnical Institute imeni S.M.Kirov)

Card 2/3

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Yu.L.; SKRIPOVA, L.L.; KRISTALEV, P.V.

Photocolorimetric determination of small amounts of cobalt in nonferrous ores by -nitroso- -naphthol. Izv. Sib. otd. AN SSSR no. 11:63-70 '60. (MIRA 14:1)

1. Tomskiy politekhnicheskiy institut.
(Cobalt—Analysis) (Naphthol)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Yu.L.; SOKOLOVICH, V.B.; SKRIPOVA, L.L.; LEL'CHUK, Kh.A.; CHASHCHINA, O.V.

Solubility of silver bromate in aqueous solutions of nitrates and sulfates of manganese, cobalt, nickel, and copper. Izv.TPI 111:51-54 '61. (MIRA 16:9)

1. Predstavleno professorom doktorom khimicheskikh nauk A.G. Strombergom. (Silver bromate) (Electrolyte solutions)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Yu.L.; SKRIPOVA, L.L.

On the separation of metals interfering with the photocolorimetric determination of small amounts of cobalt in ores by β-nitroso-α-naphthol. Izv.TPI 111:55-58 '61. (MIRA 16:9)

1. Predstavleno nauchnym seminarom kafedry analiticheskoy khimii Tomskogo ordena Trudovogo Krasnogo Znameni politekhnicheskogo instituta imeni Kirova.
(Colorimetry) (Cobalt--Analysis)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Yu.L.; BESPROZVANNYKH, B.N.

Nephelometric determination of aluminum in the form of cryolite. (MIRA 16:9)
Izv.TPI 111:59-61 '61.

1. Predstavleno nauchnym seminarom kafedry analiticheskov khimii Tomskogo ordena Trudovogo Krasnogo Znameni politekhnicheskogo instituta imeni Kirova.
(Aluminum--Analysis) (Cryolite)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LEL'CHUK, Yu. L.

The Second All-Union Conference on the Preparation and Analysis of High-Purity Elements, held on 24-28 December 1963 at Gorky State University im. N. I. Lobachevskiy, was sponsored by the Institute of Chemistry of the Gorky State University, the Physicochemical and Technological Department for Inorganic Materials of the Academy of Sciences USSR, and the Gorky Section of the All-Union Chemical Society im. D. I. Mendeleyev. The opening address was made by Academician N. M. Zhavoronkov. Some 90 papers were presented, among them the following:

P. V. Kristalev and L. B. Kristaleva, Yu. L. Lel'chuk and others; L. F. Zaichko, M. S. Zakharov, and V. F. Yankanskas. Methods for determining iron (10^{-5} to 10^{-6}%), boron (5×10^{-5}%) and phosphorus (10^{-6}%), also antimony in tin.

(Zavod. Anal. Khim, 19 No.6, 1964 p.777-79)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

L 29525-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AR6010583 SOURCE CODE: UR/0081/65/000/018/G017/G017

42

B

AUTHOR: Lel'chuk, Yu. L.; Sokolovich, V. B.; Kurysheva, Ye. A.

TITLE: Luminescent determination of aluminum traces in high purity tin

27 18 27

SOURCE: Ref. zh. Khimiya, Abs. 18G111

REF SOURCE: Izv. Tomskogo politekhn. in-ta, v. 128, 1964, 106-111

TOPIC TAGS: aluminum, trace analysis, tin, luminescence

ABSTRACT: A luminescent method of determining trace quantities of Al in a high purity tin, using salicylal-O-aminophenol, is developed. To 1 g of a sample, placed in a wide, low quartz beaker (50—60 ml) in a cool water bath 2 ml of conc. HCl, 2.5 ml conc. HBr are added. Then 1.5 ml of bromide is added dropwise, the beaker being covered all the time with a watch glass. After the violent reaction ceases the beaker is removed from the water bath and placed on a teflon table for a further decomposition of the sample and removal of the Sn. For this, the mixture is evaporated until almost dry under an electric bulb at 85 to 90°. One ml of HCl (1:1) is added to the residue and evaporated until dry. Then, again, 0.5 ml of HCl (1:1) is added and evaporated until dry. To the dry residue, 6 drops of HCl (1:4) are added. It is then transferred with a lumogallion-purified acetate buffer mixture of pH = 5.4 into a 25 ml volumetric flask, and filled to the mark with the same solution. In a conic flask with 4.7 ml of 5.8 to 6.0 pH acetate buffer, 5 ml of the obtained solution and

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"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

LELDES K.

KENDE, Janos, dr.; LELDES, Kornel, dr.

Possibility of the transmission of tuberculosis in prosthodontia and methods of prevention. Orv. hetil. 95 no.35:945-946 29 Aug 54.

1. Fogaszati Tovabbkepzo Intezet (igazgato: Kende Janos dr.)

kozlemenye

(TUBERCULOSIS, transmission
in prosthodontia, prev. measures)
(DENTAL PROSTHESIS
of tuberc. patients, precautions)

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1"

"APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R000929210007-1

COUNTRY : HUNGARY
CATEGORY : Chemical Technology. Chemical Products and Their Applications. Synthetic Polymers. Plastics.

ABS. JOUR. : RZhKhim., No 17, 1959, No. 62776

AUTHOR : Lele, D.
INSTITUTE : -
TITLE : Application of the Ureaformaldehyde Resin as Glue in the Furniture Industry.

ORIG. PUB. : Fainar, 1958, 8, No 1-2, 56-57

ABSTRACT : Presented are results of the experiments involving the application of ureaformaldehyde resin ("Arbokoll F K" brand) containing a selective hardening promoter, in the furnuture industry.
-- L. Pesin.

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LELE, D.

First hydraulic press of the furniture industry operates for a year. p.183.

FAIPAR. Budapest, Hungary. Vol. 9, no. 6, June 1959.

Monthly List of East European Accessions (EEAI), LC. Vol. 8, No. 9, September 1959
Uncl.

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