VIKULOV, A.P., kand. ekonom. nauk; PESHEKHONOV, V.A., kand. ekonom.
nauk, nauchnyy red.; VASIL'YEV, A.V., red. izd-va;
GURDZHIYEVA, A.M., tekhn. red.

[Methodology for preparing and giving lectures on economics]
O metodike podgotovki i chteniia lektsii po politicheskoi ekonomii. Leningrad, Ob-vo po raspr. polit. i nauchn. znanii
RSFSR, 1961. 46 p. (MIRA 15:2)
(Economics--Study and teaching)

KOBYLYANSKIY, I.F., inzh.; PESHEKHONOV, V.D., tekhn.

Spot and seam welding of dissimilar heat-resistant steels and alloys. Svar. proizv. no.1:21-22 Ja '64. (MIRA 17:1)

KOBYLYANSKIY, I.F., inzh.; PESHEKHONOV, V.D., inzh.

Distribution of elements in the nugget during spot welding of heterogeneous metals. Svar.proizv. no.5:16-17 My '65. (MIRA 18:6)

S/0135/64/000/001/0021/0022

ACCESSION NR: AP4009825

AUTHOR: Koby*lyanskiy, I. F. (Engineer); Peshekhonov, V. D. (Technician)

TITLE: Spot and seam welding of heat resistant steels and alloys

SOURCE: Svarochnoye proizvodstvo, no. 1, 1964, 21-22

TOPIC TAGS: spot welding, seam welding, steel welding, heat resistant steel, dissimilar material welding, alloy welding, VZh100 alloy, VZh93 alloy, EI703 alloy, 1Kh18N9T steel

ABSTRACT: The feasibility of resistance welding VZh100 alloy to VZh93 and EI703 alloys and 1Kh18N9T steel was tested on the MTP 150/1200 spot welder and the MShPR 300/1200 seam welder, using MTs4 alloy electrodes. Welding procedures were selected which insured adequate strength of the joints at room and high temperatures (up to 1000C), and x-ray control showed freedom from cracks and other defects. An example of the relationship between the strength of spot welds and the test temperature for three combinations of alloys is shown in Fig. 1 of the enclosure. The welding of such alloys should be carried out at high electrode pressures. "Z. F. Shirshova and E. N. Molodtsova took part in the work." Orig. art. has: 1 table and 3 figures.

Card 1/3

ACCESSION NR: AP4009825

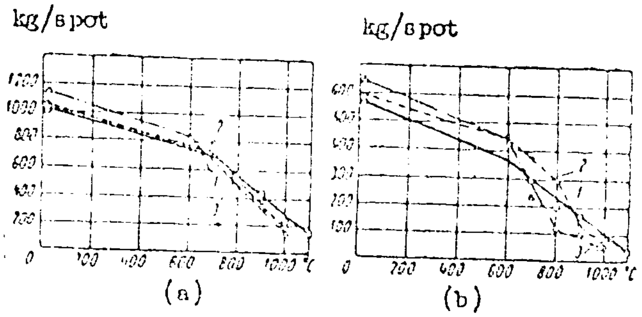
ASSOCIATION: none

SUBMITTED: 00 ENCL: 01 SUB CODE: MM

NO REF SOV: 003 OTHER: 000

Card 2/3

ACCESSION NR: AP4009825 **ENCLOSURE: 01**



(a) (b)

Fig. 1. Temperature dependence of the shear strength (a) and peeling strength (b) of the spot welds between VZh100 and VZh98 alloys (1), VZh100 and EI703 alloys (2) and VZh100 alloy and 1Kh18N9T steel

Card 3/3

S/0135/64/000/004/0026/0027

ACCESSION NR: AP4029387

AUTHOR: Koby*lyanskiy, I. F. (Engineer); Peshekhonov, V. D. (Technician)

TITLE: The tendency of welded joints of certain high-temperature and heat-resistant steels and alloys toward intercrystallite corrosion

SOURCE: Svarochnoye proizvodstvo, no. 4, 1964, 26-27

TOPIC TAGS: intercrystallite corrosion, 1Kh18N9T steel, VZh100 alloy, VZh98 alloy, EI703 alloy

ABSTRACT: There has been no information concerning the durability of VZh100, VZh98 and EI703 alloys to intercrystallite grain corrosion. Tests were made on different thicknesses of VZh100 (1.2 mm), VZh98 (1.0 mm), EI703 (1.2 mm), and 1Kh19N9T (1.5 mm) in accordance with GOST 6032-58 by the AM method. This provides for the testing of samples in an aqueous solution of copper sulphate and sulfuric acid in the presence of copper shavings for 24 hours. The solution contains 160 g of copper $CuSO_4 \cdot 5H_2O$+100 ml of sulfuric acid with a density of 1.35/liter of water and copper shavings. The results are depicted in microphotographs. The materials VZh100, VZh98, EI703 and 1Kh18N9T, their homogeneous welded joints made by argon arc welding without welding rod and the inhomogeneous joints of VZh100+VZh98, VZh100+EI703, and VZh100+1Kh18N9T welded with and without a welding rod of VZh100, were found to be resistant to

ACCESSION NR: AP4029387

intercrystallite grain corrosion in the initial state, as well as after tempering at 650° for 2 hours. In some samples, increased corrosion in the grain boundaries of the surface is observed; however, this may not be evaluated as a tendency toward corrosion. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: ML NO REF SOV: 000 OTHER: 000

Cord 2/2

KOBYLYANSKIY, [illegible]

Argon [illegible] heat-resistant steels and
alloy. [illegible] '58 [illegible]. (MIRA 12:5)

ACCESSION NR: AP4019877 S/0135/64/000/003/0016/0017

AUTHOR: Koby*lyanskiy, I. F. (Engineer); Peshekhonov, V. D. (Technician)

TITLE: Resistance welding of steel OKh16N15M3B (EP376)

SOURCE: Svarochnoye proizvodstvo, no. 3, 1964, 16-17

TOPIC TAGS: EP376 steel, resistance welding, seam welding, spot welding, steel resistance welding

ABSTRACT: Steel EP376 is Nb stabilized, austenitic after annealing and rapid cooling, and highly corrosion resistant with tensile strength $\geq$ 55 kg/mm^2 and elongation $\delta = 50\%$ at room temperature, compared to 50 kg/mm^2 and 25% respectively at 600C. Sheets 0.2—3.0 mm thick were spot and seam welded on the MTP-200 and MShP-150 units, respectively. An x-ray spotcheck indicated the welds to be free of pores or flaws. Tests at room temperature (see Fig. 1 in the Enclosure) and at temperatures up to 700C (Fig. 2) indicate that strength factor values for welded seams were above 0.9 over the range of 20—700C. Good quality of joints was assured by the selected operating

ACCESSION NR: AP4019877

technique. "The mechanical tests were carried out by E. N. Molodtsova and N. G. Alisov." Orig. art. has: 2 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 00 ATD PRESS: 3045 ENCL: 02

SUB CODE: MM NO REF SOV: 000 OTHER: 000

Card 2/4

ENCLOSURE:01

ACCESSION NR: AP4019877

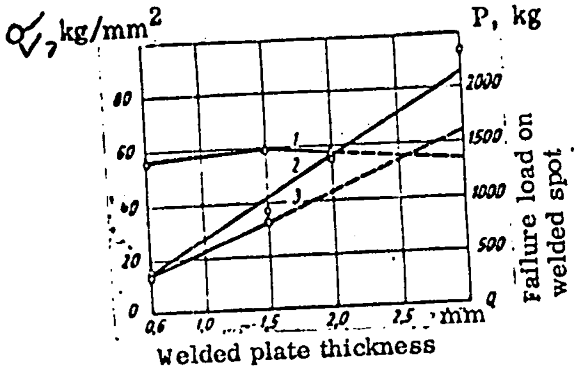


Fig. 1. Relationship between joint strength and plate thickness

1 - Seam welding; 2 - spot welding, shear test;
3 - same, rupture test

ACCESSION NR: AP4019877 ENCLOSURE: 02

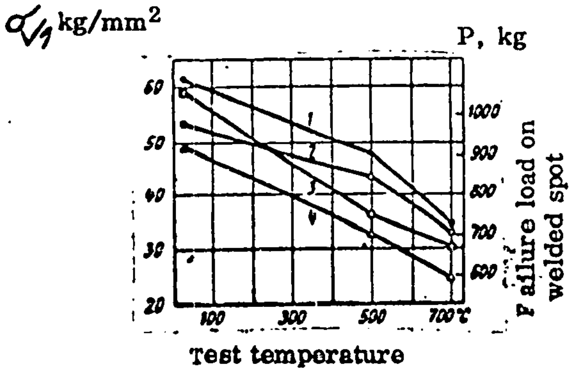


Fig. 2. Temperature dependence of joint strength

1 - Basic metal; δ = 0.6 mm; 2, 3 - seam welded joint δ = 0.6 and 1.55 mm, respectively; 4 - spot welded joint, δ = 1.5 mm

[illegible], [illegible], [illegible]; [illegible]

[illegible] O. O. [illegible] ness. [illegible].
prom. [illegible] (MIRA 18:[illegible])

KOBYLYANSKIY, I.F., inzh.; PESHEKHONOV, V.D., tekhn.

Tendency toward intercrystalline corrosion of welded joints of some heat-resistant steel and alloys. Svar.proizv. no.4:26-27 Ap '64. (MIRA 18:4)

KOBYLYANSKIY, I.F., inzh.; PESHEKHONOV, V.D., tekhn.

Resistance welding of 0Kh16N15M3B (EP376) steel. Svar. proizv. no.3:16-17 Mr '64. (MIRA 18:9)

EWT(m)/EWA(d)/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c) MJW/JD/HW/JG

L 14508-66 43

ACC NR: AP6003282 SOURCE CODE: UR/0135/66/000/001/0014/0016 40

B

AUTHOR: Peshekhonov, V. D., (Engineer); Kobylyanskiy, I. F. (Engineer); Dubitskiy, A. K. (Engineer)

ORG: none

TITLE: Welding of sheet joints of copper and Kh18N10T steel

14 21 14

44,55 14

SOURCE: Svarochnoye proizvodstvo, no. 1, 1966, 14-16

TOPIC TAGS: sheet metal, copper, steel, arc welding, resistance welding, bimetal / Kh18N10T steel

ABSTRACT: The fabrication of certain products (evaporators, heat exchangers, etc.) requires joining sheet copper to Kh18N10T steel, i.e. joining metals which differ markedly in their physicochemical properties and hence are difficult to weld together. In this connection, the authors experimentally developed a technique for joining 0.3-1.5 mm thick M2 sheet copper to sheets of steel Kh18N10T of the same thickness. Of the welding methods investigated, the two most suitable methods proved to be argon arc and resistance welding. Prior to welding the steel specimens were degreased and the copper specimens pickled. In the case of argon arc welding, treatment of the weld with Ni or with M1 Cu improves the weld structure. Contact welding requires using as

21 14

Card 1/2

L 14508-66

ACC NR: AP6003282

3

a heat shield a 0.6mm backing strip of Mo for the copper part of the joint, since the m.p. of Mo is 2610°C and its heat conduction is one-third as high as that of Cu and thus it assures the required concentration of heat at the welding site considering that, unless this precaution is taken, owing to the intensive drain of heat through the copper sheet with its high heat conduction, the weld nugget would form at the center of the steel sheet alone and the copper sheet would not adhere properly. The results of strength tests and microstructural examinations indicate that the strength of the welded joints (16.2-17.9 kg/mm^2) is at least 80% of the strength of copper and that high plasticity (0.54-0.96) is retained. The joints obtained by the argon arc welding method lack pores and cracks. The joints obtained by the resistance (spot and seam) welding methods not infrequently form cracks running from the fusion line into steel along the grain boundaries. These cracks are filled with copper which penetrated them in liquid state. As tests of the specimens revealed, however, these cracks virtually do not affect the static strength of the welded joint. Orig. art. has: 5 figures, 3 tables.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Joining of dissimilar metals

Card 2/2

L 47765-65 EPA(s)-2/EWT(m)/EPF(n)-2/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(
Pt-4/Pad/Pu-4 IJP(c) MJW/JD/HM/HW/JG

50
B

ACCESSION NR: AP5012643 UR/0135/65/000/005/0016/0017

AUTHOR: Kobylyanskiy, I. F. (Engineer); Peshekhonov, V. D. (Engineer)

TITLE: Distribution of elements in the weld nugget in spot welding of dissimilar steels 16

SOURCE: Svarochnoye proizvodstvo, no. 5, 1965, 16-17

TOPIC TAGS: stainless steel, steel spot welding, weld nugget, alloying element distribution, weld time effect/VZh100 steel, 1Kh18N9T steel

ABSTRACT: Plates, 1.2 mm thick, of VZh100 steel, a Ni-Cr-W steel containing Mo and Nb, and of 1Kh18N9T steel [AISI 321], 1.5 mm thick, were spot welded, and the distribution of the alloying elements along the weld nugget was investigated by means of spectral analysis. The size of the nugget obtained with a weld time of 0.10 sec was 1.5 times smaller than that obtained with a weld time of 0.30 sec. Results of the spectral analysis showed that the distribution of the alloying elements (Ni, Cr, Nb, Mo, W, and Ti) in the volume of the weld nugget was practically uniform. This indicated that the molten metal is intensely stirred during welding, probably by the convection currents resulting from combined action of the magnetic field of the welding

Card 1/2

ACCESSION NR: AP4040700 S/0135/64/000/006/0021/0022

AUTHOR: Koby*lyanskiy, I. F. (Engineer); Peshekhonov, V. D. (Technician)

TITLE: Resistance welding of aluminum 0.1—0.2 mm thick

SOURCE: Svarochnoye proizvodstvo, no. 6 (630), 1964, 21-22

TOPIC TAGS: aluminum foil, foil welding, spot welding, seam welding, foil weld, spot weld, seam weld, weld property

ABSTRACT: Aluminum foil 0.1—0.2 mm thick can be seam and spot welded successfully with VZh98 alloy inserts 0.6 mm thick placed between the electrode and the foil. This insert prevents overheating of the electrodes and increases the concentration of heat at the contact zone. Seam welding at a current of 5400 amp, an electrode pressure of 100 kg, and a welding time of 0.01—0.02 sec produced seams 3.5—4.0 mm wide. Spot welding at a current of 4600 amp, an electrode pressure of 100 kg, and a welding time of 0.01—0.02 sec produced spot welds with nuggets 2.5—3.00 mm in diameter. Insert thickness can be increased up to 1.2 mm, but such increases must be

Card 1/2

ACCESSION NR: AP4040700

accompanied by higher electrode pressure. The seam and spot welds produced were dense and sound and had satisfactory strength. The state of the foil surface has no effect on the weld quality and special preparation of surfaces is not required. This method was used successfully for the manufacture of sandwich structure made of work-hardened corrugated aluminum foil 0.1 and 0.2 mm thick. Orig. art. has: 2 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: MM NO REF SOV: 002 OTHER: 000

Card 2/2

KOBYLYANSKIY, I. F., inzh.; PESHEKHONOV, V. D., tekhn.

Mechanical properties of welded joints in OT4-1 with BT5-1 titanium alloys. Svar. proizv. no.10:12-14 0 '62. (MIRA 15:10)

(Titanium alloys--Welding)
(Welding--Testing)

KOBYLYANSKIY, I.F., inzh.; PESHEKHONOV, V.D., tekhnik

Argon-arc welding of vacuum-tight joints on heat exchangers.
Svar.proizv. no.1:40 Ja '63. (MIRA 16:2)
(Electric welding) (Heat exchangers--Welding)

S/135/63/000/001/014/016
A006/A101

AUTHORS: Kobylyanskiy, I. F., Engineer, Peshekhonov, V. D., Technician

TITLE: Argon-arc welding of vacuum-tight joints in a heat exchanger

PERIODICAL: Svarochnoye proizvodstvo, no. 1, 1963, 40

TEXT: An investigation was made of using argon-arc welding without filler wire to join heat-exchanger tubes with tubular plates. After assembling the tubes with the plates, special attention was given to the consecutive application of the weld joints. Initially the tubes were welded along the least concentric circumference, and then by one row in a radial direction from the center to the edges. The rows were arranged with 45° spacing. The following concentric circumferences were then welded in the same direction until the tenth row; finally the last row was welded (Figure 2). Welding was performed on direct polarity 60 amps d-c, with 1.5 mm tungsten electrode diameter, and 4 l/min argon consumption. Welding of heat exchangers by the described method yielded structures without deformations. The vacuum tightness of the welds showed one untight joint of 1,428 welds. Tests with a helium flaw detector revealed 3 un-

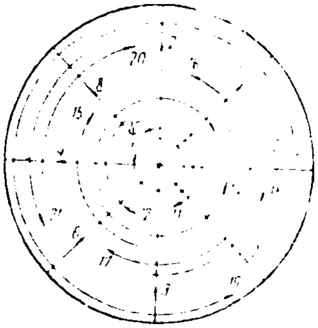
Card 1/2

Argon-arc welding of vacuum-tight joints...

S/135/63/000/001/014/016
A006/A101

tight welds. They were repaired by additional welding. There are 3 figures.

Figure 2. Consecutive welding of tubes



Card 2/2

34853
S/135/62/000/003/005
A006/A101

18.1151

AUTHORS: Kobvlyanskiy, I. F., Engineer, Peshekhon[illegible]

Properties of welded joints of heat resistant ВЖ1[illegible] (ЭП1[illegible]) [VZh100 (EP1[illegible])] steel

Svarochnoye proizvodstvo, no. 3, 1[illegible]

The authors studied the properties of weld j[illegible] steel produced by argon arc and resistance welding of 10[illegible] x 30[illegible] mm plates. Tests were made to determine the mechanical properties of joints, the effect [illegible] deviations from the welding parameters, and the effect of "rigid" or "soft" welding conditions on the quality of the welds. The following results were obtained: The VZh100 steel can be satisfactorily welded by argon-arc or resistance process. Its weldability is analogous to that of ВЖ98 (VZh98) steel. It is recommended to perform resistance welding under "soft" conditions. The deviation of welding parameters should not exceed ±5%. The hardness of the weld joint in manual [illegible] arc and resistance welding is HV 240 - 260, which is 1[illegible] - 2[illegible]% more than the hardness of the base metal. Weld-adjacent zones show also a higher hardness [illegible] within 3 - 20%. The strength of weld joints at 20 - 800°C temperature is 9[illegible] -

Card 1/2

S/135/[illegible]/000/00[illegible]/[illegible]
A00[illegible]/A[illegible]

Properties of welded joints of...

95% in argon arc welding, and 80 - 85% in resistance welding. [illegible] 1 000°C temperature range the weld joints show practically the same [illegible] the base metal. The data obtained make it possible to recommend VL1 [illegible] for the manufacture of heavy loaded welded units operating under [illegible] ing. It can be used to replace the VZn98 alloy. There are [illegible] tables and [illegible] figures.

Card 2/2

PESHEKHONOV, V.N.

Finishing of roving frame bobbins by the ironing method. Der.
prom. 8 no.12:24-25 D '59. (MIRA 13:5)
(Wood--Finishing) (Bobbins(Textile machinery))

PESHEKHONOV, Yuriy Vladimirovich; SHATALIN, Stanislav Sergeyevich;
TRIFSIK, G.B., red.; MAZLOVA, Ye.M., mlad. red.

[Branch structure of social production; on the analysis of the factors and structure of the correlation between subdivisions I and II] Otraslevaia struktura obshchestvennogo proizvodstva; k analizu faktorov i struktury sootnosheniia I i II podrazdelenii. Moskva, Ekonomika, 1965. 80 p. (MIRA 18:9)

PIGULEVSKIY, Sergey Vladimirovich, prof.; PESHEKHONOV, Yu.V., red.;
ZENIN, V.V., tekhn. red.

[Pathogenic animals of Daghestan] Patogennye zhivotnye Dagestana. Saratov, Izd-vo Saratovskogo univ. Pt.2. [Poisonous animals] IAdovitye zhivotnye. 1961. 128 p.
(MIRA 16:6)

(DAGHESTAN--POISONOUS ANIMALS)

YESHEKHONOVA,

~~PESHEKHONOVA,~~

"Immunity to Foot-and-Mouth Disease and Its Pratical Importance". Prakt, veterin. i konevodstvo, 1931, No 12. (Bibliography for Article Foot and Mouth Disease by A. L. Skomorokhov, State Publishing House for Agricultural Literature, Moscow/Leningrad 1947.)

SO: U-1625, 11 January 1952

PESHEKHONOVA,

~~[illegible]~~,

"Virus Carrying". The symposium, Iashchur v sovremennom osveshchenii, Sel'khozgis, 1932. (Bibliography for Article Foot and Mouth Disease by A. L. Skomorokhov, State Publishing House for Agricultural Literature, Moscow/Leningrad, 1947.)

SO: U-1625, 11 Januar 1952

PESHEKHONOVA

"The Clinical Picture of Foot-and-Mouth Disease". The symposium, Yashchur v sovremennom osveshchenii, Sel'khozgiz, 1932. (Bibliography from article Foot and Mouth Disease by A. L. Skomorokhov, State Publishing House for Agricultural Literature, Moscow/Leningrad, 1947.)

SO: U-1625, 11 January 1952,

FOOT-AND MOUTH DISEASE THERAPY THE SYMPOSIUM - SAME AS ABOVE.

PESHEKHONOVA, A. D.; PONOMAREV, A. A.; LIPANOVA, M. D.

Ultraviolet absorption spectra of certain 2,5-substituted furans. Izv. AN SSSR. Ser. fiz. 27 no.1:58-61 Ja '63.
(MIRA 16:1)

1. Kafedra organicheskoy khimii Saratovskogo gosudarstvennogo universiteta im. N. G. Chernyshevskogo.

(Furan--Spectra)

5.3400

SOV/[illegible]

AUTHORS: Ponomaryev, A. A., Pushekhonova, A. D.

TITLE: Concerning the Study of Furan Compounds. X. Bromination of 1,6-Dioxaspiro(4,4)nonane and Its Homologs With Complex-Bound Bromine

PERIODICAL: Zhurnal obshchey khimii, [illegible], Vol. [illegible], Nr [illegible], pp [illegible] (USSR)

ABSTRACT: Spirans react with dioxane dibromide (DDB) (ratio 1:2) forming corresponding dibromoderivatives, in high yield. Dibromoderivatives of the simplest spiran of this type and its 2-methyl homolog were obtained in crystalline and in liquid forms. It was observed that the liquid product is gradually converted into the solid form. This phenomenon is possibly connected with the existence of cis- and trans-forms of dibromides. The above reaction (component ratio 1:1) forms mostly monobromoderivatives of spirans. A table of mono- and dibromoderivatives of 1,6-dioxaspiro(4,4)-nonane and its homologs is given.

Card 1/4

Concerning the Study of Furan Compounds. X. Bromination of 1,6-Dioxaspiro(4,4) nonane and Its Homologs With Complex-Bound Bromine

[illegible]
SOV/[illegible]

(see Table A). There is 1 table, and [illegible] references, [illegible] Soviet, 5 German, 3 U.S. The U.S. references are: H. Burdick, H. Adkins, J. Am. Chem. Soc., [illegible], [illegible] (1934); K. Alexander, L. Hafner, L. Schniepp, ibid., 73, 2725 (1951); ibid., [illegible].

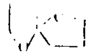
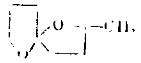
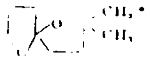
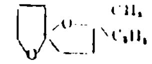
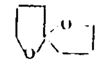
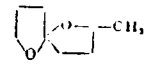
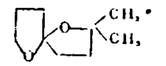
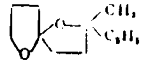
ASSOCIATION: Chernishevskiy Saratov Red Star Order State University (Saratovskiy ordena Krasnogo Znameni gosudarstvennyy universitet imeni N. G. Chernishevskogo)

SUBMITTED: January 22, 1959

Card 2/4

Concerning the Study of Furan Compounds. X. Bromination of 1,6-Dioxaspiro(4,4) nonane and Its Homologs With Complex-Bound Bromine

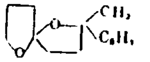
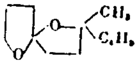
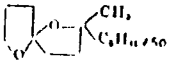
376
307

Starting spiran	Bromoderivative	bp	mp			Yield in %
	$C_7H_{11}O_2Br$	70–72° (5)	—	1.5009	[illegible]	[illegible]
	$C_8H_{13}O_2Br$	80–82 (5)		1.5006	1.[illegible]	5[illegible]7 and 26 dibromid
	$C_9H_{15}O_2Br$	68–69 (4.5)		1.48[illegible]	[illegible]	[illegible]
	$C_{10}H_{17}O_2Br$	87–89 (5)		1.4810	1.30[illegible]	76
	$C_7H_{10}O_2Br_2$	105–108 (5)	112.5°	1.5408	1.8[illegible]	65
	$C_8H_{12}O_2Br_2$	115–118 (5)	101.5	1.5[illegible]2	1.7[illegible]3	36 14
	$C_9H_{14}O_2Br_2$	110–112 (5)	—	1.5163	1.636	64
	$C_{10}H_{16}O_2Br_2$	115–117 (2)	—	1.5135	1.583	60

Card 3/4

Concerning the Study of Furan Compounds. X. Bromination of 1,6-Dioxaspiro(4,4) nonane and Its Homologs With Complex-Bound Bromine

77370
SOV/79-30-3-31

Starting spiran	Bromoderivative	bp	mp			Yield (in %)
	$C_{11}H_{18}O_2Br_2$	134—136 (5) 123—126 (2)	—	1.5089	1.525	66
	$C_{12}H_{20}O_2Br_2$	145—147 (4)	—	1.5062	1.477	73
	$C_{13}H_{22}O_2Br_2$	152—154 (4) 147—148 (3)		1.5048	1.438	68

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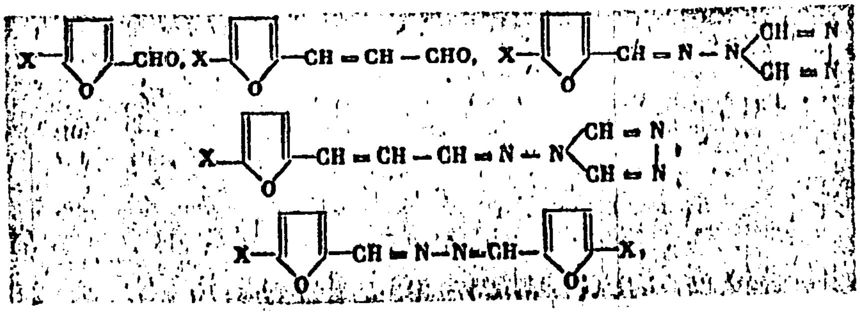
S/048/63/027/001/021/043
B106/B101

AUTHORS: Peshekhonova, A. D., Ponomarev, A. A., and Lipanova, M.D.

TITLE: Ultraviolet absorption spectra of some 2,5-substituted furans

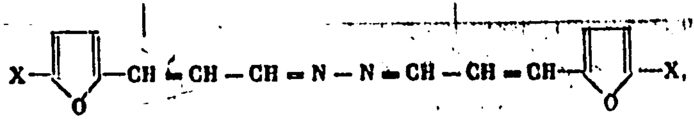
PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 1, 1963, 58-61

TEXT: This is a study on the ultraviolet absorption spectra of dioxane solutions of the following 2,5-substituted furans:



Card 1/4

Ultraviolet absorption spectra of ... S/048/63/027/001/021/043
B106/B101



$X = H, CH_3, Cl, Br, J, NO_2$.

The authors' institute was the first to synthesize such furans. The ultraviolet spectra of solutions of these compounds (except for those with $X = NO_2$) show one intensive absorption band with λ_{max} = 270-380 mμ, as dependent on the substituents in position 5 of the furan ring. Its intensity, however, is almost independent of the substituents, $\log \varepsilon = 4.5 \pm 0.3$. The azines of furfurole show a second absorption maximum at 250-280 mμ, the difference $\Delta\lambda$ between the maxima being 82-84 mμ, and the azines of furyl acrolein have an absorption maximum at 365-396 mμ, $\Delta\lambda \sim 14-16$ mμ. Substitution of CH_3, Cl, Br, or I for hydrogen in position 5 of the furan ring causes a bathochromic shift of absorption bands almost without a hyperchromic effect. This shift being 10-11 mμ for Cl and 20-25 mμ for I increases in the sequence $Cl < CH_3 \leqslant Br < I$, and

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Ultraviolet absorption spectra of ...

S/048/63/027/001/021/043
B106/B101

is practically independent of the type substituent in position 2. Introduction of a nitro group into the furan ring causes a considerable bathochromic shift of the second absorption maximum, $\Delta\lambda \sim 40$ mμ. Lengthening of the conjugate system causes a bathochromic shift of 35-45 mμ. Owing to the different effects of O=O, C=N, and C=C double bonds on the absorption maximum it is impossible to set up a general law for the position of absorption maxima as dependent on the total number of double bonds, without considering their nature. The condensation product of 5-nitrofurfurole with 1-amino-1,3,4-triazole exists in two forms, the azomethine and the hydrated form, whose melting points, solubilities, and biological activities differ considerably. The azomethine form, 1-(5-nitrofurfurylideneamino)-1,3,4-triazole, is more active. The spectrum of the hydrated form corresponds to that of 5-nitrofurfurole. Therefore, a molecular combination of 5-nitrofurfurole with aminotriazole is assumed. The same result was obtained for the condensation product of 5-nitrofurfurole with 2,5-dimethyl-1-amino-1,3,4-triazole. There are 3 figures and 1 table.

Card 3/4

Ultraviolet absorption spectra of ... S/048/63/027/001/021/043
B106/B101

ASSOCIATION: Kafedra organicheskoy khimii Saratovskogo gos. universiteta im. N.G. Chernyshevskogo (Department of Organic Chemistry of the Saratov State University imeni N.G. Chernyshevskiy)

Card 4/4

PONOMAREV, A.A.; TIL', Z.V.; PESHEKHONOVA, A.D.; RESHETOV, V.P.

Study of furan compounds. Part 9: Synthesis and hydration of tertiary γ-furylalkanols. Zhur.ob.khim. 27 no.5:1369-1374 My '57. (MLRA 10:8)

1.Saratovskiy gosudarstvennyy universitet.
(Furan)

PESHEKHONOVA, A. I.

5

Chem

2457. **Bromimetric determination of monochlorophenoxyacetic acids in 2:4-D preparations.** A. N. [illegible], A. I. Peshekhonova, K. G. Kirilenko and N. P. [illegible]. *Khim. Prom.*, 1956, 7, 46–47; *Ref. Zhur., Khim.*, 1956, Abstr. No. 47,363.—The method is based on reaction with Br under conditions in which di- and trichloro-substituted phenoxyacetic acids are not brominated. To 3 to 3·5 g of 2:4-D (dried at 70° to 80°), or 4 to 4·5 g of a 2:4-D preparation, add 150 ml of water and 10 to 15 % NaOH till alkaline, and warm till dissolved. Cool the soln. to between 20° and 25° and make up to 250 ml. To 100 ml add 0·1 *N* KBr - $KBrO_3$ (50 ml) and HCl (10 ml) and set aside in the dark for 10 min. at 20° to 25°. Then stand the flask for 10 min. in ice water, add a 20% soln. of KI (10 ml), and titrate the liberated iodine with 0·1 *N* $Na_2S_2O_3$. C. D. Kopkin

USSR/Chemistry - Herbicides FD-3370

Card 1/1 Pub. 50 - 14/20

Authors : Shebuyev, A. N., Cand Chem Sci; Peshekhonova, A. I., Kirilenko, K. G., Kurcheninova, N. K.

Title : A method for the bromometric determination of monochlorophenoxyacetic acids in 2,4-D.

Periodical : Khim. prom. No 7, 430-431, Oct-Nov 1955

Abstract : Developed a method of determining monochloroacetic acids in 2,4-D, which in combination with a titrimetric determination of the separated acids with the aid of two indicators makes it possible to determine the content of physiologically active substance in technical 2,4-D. Four references, 2 USSR, both since 1940. Three tables.

Institution : Scientific Research Institute of Organic Intermediates and Dyestuffs imeni K. Ye. Voroshilov.

L 38285-65 EWT(m)/EPF(c)/EWP(j)/EWA(c)/T Pc-4/Pr-4 RPL JW/RM
ACCESSION NR: AR5003009 S/0081/64/000/020/S035/S035 23 B

SOURCE: Ref. zh. Khimiya, Abs. 20S190

AUTHOR: Peshekhonova, A. L.; Kamenskiy, I. V.; Korshak, V. V.; Solodkin, L. S.; Shevchenko, Yu. V.

TITLE: A study of the formation of furfural polymers in the presence of hexamethylenetetramine

CITED SOURCE: Tr. Mosk. khim.-tekhnol. in-ta im. D. I. Mendeleyeva, vyp. 42, 1963, 137-142

TOPIC TAGS: furfural polymer, hexamethylenetetramine polymer, polymer fractionation, plastics synthesis, polymer spectroscopy

TRANSLATION: The authors studied the mechanism of formation of polymers based on 99.95% pure hydrolytic furfural and 99.98% pure hexamethylenetetramine at a mole ratio varying from 30:1 to 3:1. They found that the solid polymers FG-2, FG-1 and FG-10, obtained in > 80% yield at the boiling point of the reaction mixture and a furfural:hexamethylenetetramine ratio of 15:1, 6:1 and 3:1, re- 15

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L 38285-65
ACCESSION NR: AR5003009

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spectively, are of considerable interest for the manufacture of plastics. The polymers were purified and separated into fractions by the technique of fractional solution in petroleum ether, ethanol, acetone and dioxane followed by precipitation with water. The infrared and ultraviolet spectra indicate the presence of an unchanged furan ring, bound in the polymers in the α-position, as well as keto groups in FG-2 and FG-1 and amido groups in FG-10 (see RZhKhim, 1964, 5N5). L. Kotlyarevskaya.

SUB CODE: GC, OC ENCL: 00

Card 2/2 ao

PESHEKHONOVA, A.L.; KAMENSKIY, I.V.; KORSHAK, V.V.; KOVARSKAYA, B.M.;
BELOVA, A.A.

Study of the conditions of the formation of spatial structures in furfurole hexamethylenetetramine polymers. Plast. massy no.12: 9-13 '64. (MIRA 18:3)

L 19005-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RPL/APGC(b)/SSD/AFWL/BSD/
ESD(gs)/ESD(t) RM

ACCESSION NR: AP5000746 S/0191/64/000/012/0009/0013

AUTHOR: Peshekhonova, A.L.; Kamenskiy, I.V.; Korshak, V.V.; Kovarskaya, B.M.; Belova, A.A. [redacted]

TITLE: Conditions for the formation of steric structures in furfural-hexamethylenetetramine polymers

SOURCE: Plasticheskiye massy", no. 12, 1964, 9-13

TOPIC TAGS: furfural copolymer, hexamethylenetetramine copolymer, polymer curing, catalytic curing, polymer crosslinking, polymer deformation, infrared spectroscopy, zinc chloride

ABSTRACT: Crosslinking in furfural-hexamethylenetetramine polymers with molar ratios of 6:1 and 15:1 and molecular weights of 456 and 546, respectively, was studied by determining the change in deformation with temperature, and by chemical and infrared analysis of samples cured thermally at up to 300C, or catalytically at up to 250C. In both the thermal and catalytic processes, steric links were shown to be formed primarily with the participation of double bonds of the furan ring with lesser effects of functional groups, but thermal crosslinking at 250-280C results in better mechanical properties and more intensive chem-

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I 005-65
ACCESSION NR: AP5000746

ical changes and catalytic curing. The latter was studied at 120-250C with Petrov's catalyst, benzenesulfonic acid, or zinc chloride, which gave better results than the other catalysts. Generally, deformation of catalytically cured specimens started at lower temperatures than that of samples obtained by thermal treatment at higher temperatures. A decrease in the nitrogen content of thermally cured polymers was shown to be significant for the reaction mechanism, indicating formation of a rigid steric structure involving not only the double bonds but also the nitrogen atoms of furan heterocycles, and the partial destruction and recombination of the initial polymer molecule. Orig. art. has: 6 tables and 6 figures.

ASSOCIATION: None

SUBMITTED: 00
ENCL: 00
SUB CODE: MT
NO REF SOV: 011
OTHER: 005

Card 2/2

KAMENSKIY, I.V.; PESHEKHONOVA, A.L.; ITINSKIY, V.I.

Resins based on furfurole and hexamethylenetetramine. Plast.massy no.10:15-19 '61. (MIRA 15:1)
(Resins, Synthetic) (Furaldehyde) (Hexamethylenetetramine)

28190
S/191/61/000/010/003/008
B101/B110

15.8130

AUTHORS: Kamenskiy, I. V., Peshekhonova, A. L., Itinskiy, V. I.

TITLE: Furfural- and hexamethylentetramine-base resins

PERIODICAL: Plasticheskiye massy, no. 10, 1961, 15-19

TEXT: A short review of different methods for obtaining furfural resins and a report on the production of resins from commercial furfural (boiling point, 158-162°C, d_{20}^{20} = 1.1514, h_{D}^{20} = 1.5280) and hexamethylentetramine (purity, 98.5 %) are given. At a ratio of 3-8 moles of furfurole per mole of hexamethylentetramine, a fusible and soluble resin forms within 5-12 hr, according to the ratio. It becomes infusible and insoluble at temperatures ≥250°C within 3-3.5 min. The optimum ratio with 100 % yield is 6 : 1. This polymer is termed ФГ-1 (FG-1) resin (molecular weight, 350; hardening within 2 min at 250°C). Moreover, another resinous product (95 % yield) was synthetized at a ratio of 15 : 1 (viscosity 40-45 sec in the B3-4 (VZ-4) viscosimeter). On thermal treatment, the volatile products are distilled off, and a hard, brittle,

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[illegible]
S/191/61/000/010/003/008
B101/B110

Furfural- and hexamethylentetramine-base

black resin is obtained, which dissolves readily in acetone, partially in alcohol, and is insoluble in water Further heating makes it insoluble and infusible. This product is termed ФГ-2 (FG-2) (molecular weight, 452; hardening within 4 min at 250°C) Solvents for both resins are acetone, furfural, ethyl cellosolol, furyl alcohol, dioxane and acetic acid. Residual hexamethylenetetramine was with water, residual furfural with petroleum ether. They were dried, purified with ethyl alcohol, extracted in acetone, dissolved in dioxane and precipitated with water The following fractions were obtained by successive dissolution in ethanol, acetone, and dioxane and precipitating with water:

solvent	percentage of the fraction in FG-1	in FG-2
ethanol	24.20	10 55
acetone	36.50	51 70
acetone (fraction 3)	-	18 30
dioxane	28 40	17 40
dioxane (fraction 4)	9 15	-

Molding powder was produced from FG-2 Kaolin impregnated with a 50 %

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S/191/61/000/010/003/006
B101/B110

Furfural- and hexamethylentetramine-base

solution of FG-2 in acetone served as filler. The heat resistance was determined by means of S. N. Zhurkov's device (Trudy I i II konferentsii VMS (Papers of the First and the Second Conference on High-molecular Compounds), Izd. AN SSSR, 1945). Optimum method: Heating of the molding powder at 120°C for 2.5 hr; tableting under 1250 kg/cm^2; before pressing, heating at 200°C (1-2 min per mm of tablet thickness), pressing at 300°C and 250-300 kg/cm^2. A heat resistance of up to 400°C (0.055 % deformation) has been found. FG-2 plastics are stable in 40 % NaOH, 50 % H_2SO_4, but are destroyed by 58 % HNO_3. The water absorption was 0.65 % in cold water (24 hr), and 0.432 % in boiling water (30 min). Glass-reinforced СФГ-2 (SFG-2) plastics were made with Т-90 п/з (T-90 p/z) glass fabric containing 2.5 % paraffin lubricant. Glass fabric was impregnated with a 45 % FG-2 solution in acetone, and dried for 24 hr at room temperature. Then, it was heated at 120°C for 2.5 hr, and pressed at 300°C and 10 kg/cm^2. The impact strength of the glass-reinforced plastic was 260 kg·cm/cm^2, and the static bending strength was 2073-2380 kg/cm^2. Combination with epoxy resins is recommended to prevent the lamination observed. The dielectric constant of SFG-2 was 4.9-5.2 between 20 and 300°C. As compared with

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S/191/61/000/010/003/008
B101/B110

Furfural- and hexamethylentetramine-base

bakelite powder, the use of FG-2 as a binding agent for quartz sand in the manufacture of molds for precision casting resulted in a reduced separation of gas (11.4 cm^3) Hu Lan-chieh assisted in the experiments There are 4 figures, 6 tables, and 17 references 4 Soviet and 13 non-Soviet The two most recent references to English-language publications read as follows G Mains, M Phillips, Chem Met Eng , 24, 661 (1921);
US Patent 1909784

Card 4/4

L 19422-65 EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T/EWP(b) Pc-4/Pq-4/
Pr-4/Ps-4 RM/WH/WW
ACCESSION NR: AR4048161 S/0081/64/000/011/S059/S059

SOURCE: Ref. zh. Khimiya, Abs. 11S355

AUTHOR: Peshekhonova, A.L., Kamenskiy, I.V., Korshak, V. V., Tomashuk, L. A.

TITLE: Glass textolites based on nitrogenous furfural resins

CITED SOURCE: Tr. Mosk. khim.-tekhnol. in-ta im. D.I. Mendeleyeva, vy*p. 42, 1963, 146-150

TOPIC TAGS: glass textolite, glass reinforced plastic, furfural resin, nitrogenous furfural resin, binder content, glass plastic

TRANSLATION: The authors studied the relationship between the physical and mechanical properties of glass reinforced plastics based on nitrogenous furfural resins and their binder content. The results showed that the optimal binder content is 27-35% for woven materials and 35-40% for non-woven materials. The structure and density of the glass fabric were found to have an effect on the physical and mechanical properties of the glass textolites. The use of a glass fabric treated with GVS-9 increased the strength only at normal temperatures. An attempt was made to obtain furfural-based glass textolites by the vacuum

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L 19422-65

ACCESSION NR: AR4048161

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autoclave method. In this connection, the original resistance to static bending was low, but remained at practically the same level at temperatures of 200 and 300C. A Dukor

SUB CODE: MT ENCL: 00

Card 2/2

PESHEKHONOVA, G.Ye.

Practical experience in the fundamentals of chemical technology. (MIRA 11:10)
Politekh. obuch. no.9:74-77 S '58.

1. Kaluzhskiy pedagogicheskiy institut.
(Chemistry--Study and teaching) (Field work (Educational method))

KHOVYAKOVA, R.F.; PESHEKHONOVA, L.A.

Rapid method for the determination of zirconium in electrical insulating ceramics. Trudy Ural.politekh.inst.no.121:85-90 '62.
(MIRA 16:5)

(Zirconium—Analysis) (Ceramics)

COUNTRY : USSR

CATEGORY : Cultivated Plants. Cereals. M

ABS. JOUR. : RZhBiol., No.14, 1958, No. 63305

AUTHOR : Petinov, N. C., Volkov, I. A., Peshekhonova, N. F.

INST. : Academy of Sciences USSR

TITLE : Development of the Root System in Different Spring Wheat Varieties Under the Conditions of Irrigation and Application of Fertilizers.

ORIG. PUB. : V sb.: Orosheniye s.-kh. kul'tur v Tsentr.-chernozem. polose RSFSR. Vyp. 2. M., AN SSR, 1956, 262-295

ABSTRACT : The effect of irrigation and manuring of spring wheat (Lyutestsens 62, Gordeiforme 10, Moskovka, Wheat-couch grass hybrid 22850, Narodnaya, Otechestvennaya, Al'bidum 43, Bezenchukskaya 98, Flora 6) on the development of root system and productivity was studied during 1949-1952 at Kursk ZOMS. In dry years, it is necessary to carry out 1-2 irrigations with a norm of 400-500 and in severe drought 600-700 m^3/ha. Irrigation promoted an increase in the number of nodular roots by 1½ times and irrigation with manuring (NPK) - by more than 2½ times. K produced

Card: 1/2

PESHEKHONOVA, N. F., VOLKOV, I. A.

Grain

Lodging of grain and some means of preventing it. Dokl. AN SSSR 84, No. 3, 1952
rcd. 18 March 1952

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

PESHEKHONOVA, N.F., VOLKOV, I.A.

Grain

Lodging of grain and some means of preventing it. Dokl. AN SSSR 84, No. 3, 1952
Rcd. 18 March 1952

2
SO: Monthly List of Russian Accessions, Library of Congress, September 1953, Uncl.

PESHEKHONOVA, I.V., meditsinskaya sestra (Moskva)

Characteristics of the care of patients with a craniocerebral trauma and acute disorders of cerebral circulation. Fel'd. i akush. 27 no.8:48-52 Ag'62. (MIRA 16:8)

(BRAIN—WOUNDS AND INJURIES)

SHUL'TS, M.M.; PARFENOV, A.I.; PESHEKHONOVA, N.V.; BELYUSTIN, A.A.

Methods of investigation of the electrode properties and chemical stability of glasses. Vest. LGU 18 no.4:98-104 '63. (MIRA 16:3)
(Electrodes, Glass)

SHUL'TS, M.M.; PESHEKHONOVA, N.V.; PARFENOV, A.I.; IVANOVA, Ye.A.; PETROVA, V.N.

Effect of alkaline earth oxides on the electrode properties and chemical stability of lithium silicate glasses. Vest. LGU 18 no.4:104-114 '63. (MIRA 16:3)

(Electrodes, Glass) (Alkaline earth oxides)
(Lithium silicates)

ACCESSION NR: AT4040548 S/0000/64/000/000/0106/0115

AUTHOR: Nikol'skiy, B. P.; Shul'ts, M. M.; Peshekhonova, N. V.; Parfenov, A.I.; Mazurin, O. V.

TITLE: Lithium-cesium-lanthanum silicate electrode glass for pH determinations

SOURCE: Soveshchaniye po khimii redkikh elementov. Leningrad, 1961. Khimiya redkikh elementov (Chemistry of rare elements); doklady* soveshchaniya. Leningrad, Izd-vo Leningr. univ., 1964, 106-115

TOPIC TAGS: glass, electrode glass, pH measurement, hydrogen electrode, silicate glass, rare earth oxide, glass electrical conductivity, lithium oxide, cesium oxide, lanthanum oxide

ABSTRACT: The authors investigated the effect of the oxides of Li, Cs and La on the limits of linearity of the relationship between pH and electrode potential, as well as the specific electrical conductivity and chemical stability, of electrodes made from glass formed by oxide system of progressing complexity: Li_2O - SiO_2,

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ACCESSION NR: AT4040548

Li_2O - Cs_2O - SiO_2, Li_2O - CaO(BaO) - SiO_2, Li_2O - $La_2O_3(Nd_2O_3)$ - SiO_2, Li_2O - Cs_2O - La_2O_3 - SiO_2, Li_2O - BaO - La_2O_3 - SiO_2, Li_2O - Cs_2O - CaO - BaO - La_2O_3 - SiO_2, and so forth. The electrical conductivity of binary glass was found to be enhanced by additions of up to 12 mol % Cs_2O; it drops sharply beyond this point to exhibit the well-known Mueller and Markin's effect. Additions of La or Nd oxides to Li_2O - SiO_2 glass shift the lower limit of linearity mentioned above into the acid region and appreciably increase the chemical stability. Li_2O - La_2O_3 - SiO_2 glass systems may be used for measuring pH values as low as 2. To establish the optimal ratios of Cs, Ba and La for glass with a wide range of linearity between pH and electrode protential, a series of Li_2O (24, 27, 30, 33 wt. %) - Cs_2O (0 - 9%) - La_2O_3 (0-9%) - SiO_2 and Li_2O (27%)-BaO(0-9%)-La_2O_3(0-9%)-SiO_2 systems was studied. Glass with 3-5 mol% Cs_2O and 5-8 mol% La_2O_3 was found to possess the highest upper limit of linearity. Orig. art. has: 5 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 21Jan64 DATE ACQ: 28May64 ENCL: 00

SUB CODE: IC, MT NO REF SOV: 014 OTHER: 001

Card 2/2

ACCESSION NR: AT4040547 S/0000/64/000/000/0096/0105

AUTHOR: Shul'ts, M.M., Peshekhonova, N.V., Belyustin, A.A., Parfenov, A.I., Bobrov, V.S.

TITLE: Electrode properties of alkali silicate glasses containing the oxides of gallium, indium, titanium and zirconium

SOURCE: Soveshchaniye po khimii redkikh elementov. Leningrad, 1961. Khimiya redkikh elementov (Chemistry of rare elements); doklady* soveshchaniya. Leningrad, Izd-vo Leningr. univ., 1964, 96-105

TOPIC TAGS: glass, silicate glass, electrode behavior, silicate glass electrical property, rare earth oxide, alkali silicate glass, gallium oxide, indium oxide, titanium oxide, zirconium oxide

ABSTRACT: After a theoretical review of the electrode properties of various glasses and the relationship between the EMF of an Ag AgCl, HCl glass buffer KCl, Hg_2Cl_2 Hg cell and pH, the authors describe the effect of the addition of various amounts of rare oxides to lithium-silicate, lithium-aluminium-silicate, sodium-aluminium-silicate, and sodium-barium-aluminium-silicate glasses. In glasses of

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ACCESSION NR: AT4040547

the series of 24% Li_2O-X% R_2O_3 - (76-X)% SiO_2, when R=B, Al, Ga, in order to obtain the same effect it is necessary to incorporate more Ga_2O_3 than Al_2O_3 and more B_2O_3 than Ga_2O_3, which means that the effect of Ga_2O_3 on the electrode properties is between the effects of B_2O_3 and Al_2O_3. Analogous results were obtained with glasses containing 27 and 30% LiO_2. In glass of the system 22% Na_2O-X% Ga_2O_3-(78-X)% SiO_2, added gallium acts as a glass former and to some extent as a modifier. In a system containing 22% Na_2O-X% In_2O_3 - (78-X)% SiO_2, it was observed that the deviation from the hydrogen function increased with an increase in In_2O_3, but was less than with Ga_2O_3. In glass of the system 22% Na_2O - 4% R_2O_3 - 74% SiO_2 (R B, Al, Ga and In), the effect of the R_2O_3 oxides on the electrode behavior of sodium silicate glasses decreased in the order Al > Ga)B>In, as in the lithium silicate glasses. This order is characteristic for glasses when $[R_2O_3]/[Na_2O] < 0.3$. If $0.3 < [R_2O_3]/[Na_2O] < 1$, the order is different: A > B > Ga > In; while if $[R_2O_3]/[Na_2O] > 1$, the order is Ba > Al > Ga > In. In the system Na_2O-TiO_2-SiO_2 where Na_2O = 16-22 mol.%, the effects were characteristic for the oxides of glass formers, and analogous data were obtained with some LiO_2-TiO_2-SiO_2 systems. Relatively small amounts of TiO_2

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ACCESSION NR: AT4040547

produced differentiation with respect to the stability of the bonds to H^+ ions similar to that obtained for the R_2O_3 oxides. In sodium and lithium silicate glasses, ZrO_2 showed similar results. The electrode behavior of alkali silicate glasses into which oxides of Ti and Zr are incorporated can be explained by the formation of bonds in which the atoms of these elements are surrounded by oxygen in such a way that a complex is formed which carries a negative charge and which determines the predominantly ionic bond of hydrogen in the glass. Addition of barium oxide to lithium silicate glasses containing ZrO_2 seems to abolish the glass forming properties of ZrO_2. Orig. art. has: 7 figures.

ASSOCIATION: none

SUBMITTED: 21Jan64 ENCL: 00 SUB CODE: MT, IC

NO REF SOV: 011 OTHER: 001

Card 3/3

SHUL'TS, M.M.; PESHEKHONOVA, N.V.; KOPUNTSOVA, T.A.; SHANDALOVA, L.P.

Effect of alkaline earth oxides on the electrode properties and chemical stability of sodium silicate glasses. Vest. LGU 18 no.4:114-120 '63. (MIRA 16:3)
(Electrodes, Glass) (Alkaline earth oxides) (Sodium silicate)

SHUL'TS, M.M.; PESHEKHONOVA, N.V.; SHEVNINA, G.P.

Electrode properties of lithium borosilicate and gallosilicate glasses. Vest. LGU 18 no.4:120-126 '63. (MIRA 16:3)
(Electrodes, Glass) (Lithium borosilicate) (Lithium gallosilicate)

SHUL'TS, M.M.; PESHEKHONOVA, N.V.; LIPETS, T.V.

Electrode properties and chemical stability of lithium silicate glasses containing barium and lanthanum oxides. Vest. LGU 18 no.4:160-162 '63. (MIRA 16:3)
(Electrodes, Glass) (Lithium silicates) (Barium oxide)
(Lanthanum oxide)

S/054/63/004/001/019/022
B101/B235

AUTHORS: Shul'ts, M. M., Peshekhonova, N. V., Lipets, T. V.

TITLE: Study of the electrode properties of lithium silicate glasses containing barium and lanthanum oxides

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 1, 1963, 160-162

TEXT: The curves E versus pH of the system $Li_2O - BaO - La_2O_3 - SiO_2$ containing 27 mole% Li_2O and 0-9 mole% BaO and La_2O_3 were plotted and the stability of the glasses to H_2O and 0.1 N HCl at 100°C was tested. Addition of BaO to glasses containing 3% La_2O_3 extends the range of the H^+ function. At an La_2O_3 content of 6-7.5 mole% this effect does not occur until not less than 6 mole% BaO have been added. The H^+ function range is again reduced by adding more BaO. At 9% La_2O_3, the extension of the H^+ function range stops already at 3% BaO. Addition of La_2O_3

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extends the above mentioned range only at BaO contents smaller than 6%. There exists, however, a small range of additives (6-9% BaO, 3-6% La_2O_3) by which the upper limit of the H^+ function range is shifted to values higher than those of the corresponding ternary systems. The effects of La_2O_3 and BaO are cumulative. At 3% La_2O_3, a BaO (or La_2O_3) addition of up to 6% does not affect the stability of the glass to H_2O. Higher additions of BaO or La_2O_3, however, reduce the stability. There are 1 figure and 1 table.

SUBMITTED: October 1962

AUTHORS: Nikol'skiy, B. P., Shul'ts, M. M., 7-1-3/32
Peshekhonova, N. V.

TITLE: The Theory of the Glass Electrode (Teoriya steklyannogo elektroda) VII. The Effect of Foreign Ions on the Sodium and Potassium Functions of Glass Electrodes (VII. Vliyaniye postoronnikh ionov na natriyevuyu i kaliyevuyu funktsiyu steklyannykh elektrodov)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 1, pp. [illegible]-2[illegible] (USSR)

ABSTRACT: The following problems were investigated here: 1) The influence of foreign ions on the sodium function of glass electrodes at various temperatures. 2) The presence of a potassium function with glass electrodes of potash glass and the influence of various cations of various temperatures on the potash function. In order to carry out exactly the investigations of the thermodynamic properties of the sodium glass electrode a galvanic without transfer was used.

-Ag AgCl, inner solution glass membrane outer solution

Card 1/5 $AgCl\ Ag^+$ (1)

The Theory of the Glass Electrode. VII. The Effect of Foreign Ions on the Sodium and Potassium Functions of Glass Electrodes

76-1-3/32

with the corresponding index means the magnitude of the potential jump at the limit of two touching phases. A sodiumchloride solution was used as inner and outer solution. Alumoborium-silicate glass, the composition of which varied only within certain limits, was used. This glass differs from that serving for the production of glass electrodes with a hydrogen function only insofar as the hydrogen function is much less pronounced here. Every experiment consisted of two parts: a measurement of the decrease of e.m.f. - E in pure sodium chloride solution and the measurement of E in compound solutions. Results: 1) Investigation of the influence of various cations on the sodium function of glass electrodes. The reaction of sodium glass electrodes in compound solutions of sodium chloride as well as in the chlorides of hydrogen, potassium, lithium, rubidium, ammonium, magnesium and calcium at 20, 35, 60 and 65°C were investigated. The authors show that the hydrogen ion exercises the greatest influence on the sodium function of the glass electrode. This is followed with decreasing influence by the ions of potassium, rubidium, magnesium and calcium. The position of the lithium ion among [illegible] like

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The Theory of the Glass Electrode. VII. The Effect of Foreign 76-1-3/32
Ions on the Sodium and Potassium Function of Glass Electrodes

cations is anomalous from the point of view of its influence on the sodium function of the glass electrode. The exact analysis of this anomalously small influence will be given in the following work. In order to characterize the influence of the temperature on the sodium function in a semiquantitative manner of the glass electrode in pure sodium salt solutions the theoretical coefficient [illegible] = 2,3 RT/F of the equation for the glass electrode is compared with the experimental magnitude ϑ_e, i. e. the angular coefficient of the inclination of the straight line $E = f(\log a_{NaCl})$. The authors show that the influence of the temperature on the difference between [illegible] and ϑ_e is small and that with a rise of temperature both values approach each other. The authors also show that (1) each of the experimental curves) a rise of temperature [illegible] a little the domain of the basic electrode function. 2) The investigation of the potassium function of glass electrodes. Here only [illegible] cell [illegible] which [illegible] according to the following scheme:

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The Theory of the Glass Electrode. [illegible] The Effect of [illegible]
Ions on the Sodium and Potassium [illegible] Glass Electrodes

Ag, AgCl, KCl 1,0 [illegible] glass KCl + [illegible]Cl, AgCl
[illegible] the outside of
electrode [illegible] electrode

The authors [illegible] experiments to [illegible] potassium electrodes [illegible] KCl [illegible] glass composition the potassium function of the electrode would possess about 9[illegible]% of the value of the theoretical function [illegible] ideal potassium electrode. They further [illegible] that the hydrogen ion has the greatest effect [illegible] function of potassium glass. This is followed by sodium, lithium, barium, magnesium and calcium ions. The lithium ion, [illegible] in the glass [illegible] sodium glass, influences the potassium function of the glass electrode [illegible] little. There are 5 figures, 5 tables, and 1[illegible] references, 7 of which are Slavic.

ASSOCIATION: Leningrad State University imeni A. A. Zhdanov (Leningradskiy gosudarstvennyy universitet imeni A. A. Zhdanova)

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The Theory of the Glass Electrode. VII. The Effect of Foreign [illegible]-1-5/32
Ions on the Sodium and Potassium Functions of Glass Electrodes

SUBMITTED: July 6, 1956

AVAILABLE: Library of Congress

Card 5/5

NIKOL'SKIY, B.P.; SHUL'TS, M.M.; PESHEKHONOVA, N.V.; BELYUSTIN, A.A.

Particular features of the electrode behavior of glass containing two acid (glass-forming) oxides) Dokl. AN SSSR 140 no.3:641-643
(MIRA 14:9)
S '61.

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova.
2. Chlen-korrespondent AN SSSR (for Nikol'skiy).
(Electrodes, Glass)

S/054/63/004/001/012/022
B101/B215

AUTHORS: Shul'ts, M. M., Peshekhonova, N. V., Parfenov, A. I., Ivanova, Ye. A., Petrova, V. N.

TITLE: Study of how alkaline earth oxides affect the electrode properties and chemical stability of lithium silicate glasses

PERIODICAL: Leningrad. Universitet. Vestnik, Seriya fiziki i khimii, no. 1, 1963, 104-114

TEXT: Glasses containing 24, 27, or 30 mole% Li_2O and an addition of 0.20 mole% of BaO, CaO, MgO, or BeO were studied by plotting the curves E versus pH. Results: BaO shifts the upper limit of the H^+ function range by 0.1 - 0.3 pH units into the alkaline region. In some cases, also the lower limit of the H^+ function is shifted in positive direction. The exchange constant of Li - Ba glasses is somewhat lower than that of binary glass. CaO addition narrows the H^+ function range in the alkaline region, extends the transition range by ~1 pH unit, and increases

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Study of how alkaline earth oxides ... B101/B215

the exchange constant. MgO has the same effect but much more intensively. The shift in the upper limit of the H^+ function caused by 15 mole% MgO at 27 mole% Li_2O is 3.3 pH units, but that due to 15 mole% CaO is only 1 pH unit. The shift caused by BeO is 2 - 3 pH units at no more than 2.5 mole%; at 15 - 20 mole% BeO, this shift in acid direction is 3-4 pH units. The effect on the exchange constants increases as follows: BaO $<$ CaO $<$ MgO $<$ BeO. This is probably due to weaker H-bonds owing to the formation of strongly acid ionogenic groups. An addition of small amounts of BaO changes the stability of glass to H_2O but slightly, whereas 20 mole% BaO reduces its chemical stability. The stability is increased by up to 10 mole% CaO, and decreased by higher CaO concentrations; but it remains higher than that of binary glass. In an acid solution, 5 mole% CaO increasesthe stability, but at 10-20 mole% CaO the Li_2O leaches out intensively. MgO has a similar effect on the chemical stability. BeO increases the stability in H_2O and in acids.

Conclusion: The stability of the glass is increased by elements that form ionogenic groups in lithium silicate glasses such as MgO and

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Study of how alkaline earth oxides ...

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especially BeO, and reduced by oxides which form modifying ions (BaO). There are 3 figures and 5 tables.

SUBMITTED: October 1962

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S/054/63/004/001/011/022
B101/B215

AUTHORS: Shul'ts, M. M., Parfenov, A. I., Peshekhonova, N. V., Belyustin, A. A.

TITLE: Method for studying the electrode properties and chemical stability of glasses

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 1, 1963, 98-104

TEXT: The regularities governing the relation between the electrode properties of glasses and their chemical composition were studied in binary alkali silicate glasses such as $Li_2O - SiO_2$ and $Na_2O - SiO_2$, as well as in three-component glasses which, besides alkali oxide and SiO_2, contained also an element belonging to the groups II, III, IV, or V of the periodic system, as well as in multicomponent glasses such as $Li_2O - Cs_2O - La_2O_3 - SiO_2$; $Li_2O - BaO - La_2O_3 - SiO_2$; $Na_2O - BaO - Al_2O_3 - SiO_2$ and others. The production of electrodes in the form of blown-up glass balls of 8-10mm diameter wall thickness 0.2-0.3mm is described.

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Method for studying the electrode ... B101/B215

The curves E versus pH were plotted and the point b of the beginning H^+ function, point c of the end of the H^+ function, and point d of the beginning metal function were determined in order to characterize the electrode properties. The equation $E = E^0 + \vartheta \log (a_{H^+} + K a_{M^+})$, where $\vartheta = 2.3RT/F$, K = equilibrium constant of the ion exchange between glass and solution is of satisfactory validity for a sharp transition from the H^+ function to the metal function. For three-component glasses, $\lambda = K^x/K'$ was obtained where K^x is the exchange constant of the glass containing a second oxide and K' is the exchange constant of the binary glass. The chemical stability was determined by treating the powdered glass (particle size = 80 - 100μ) for 1 hr with water or 0.1 N HCl at 100°C and by determining colorimetrically the components in solution. The chemical stability was characterized by the ratios $[R_2O]_{sol}/[R_2O]_{glass}$ and $[SiO_2]_{sol}/[SiO_2]_{glass}$. In some cases the stability of the ground glass faces was tested by measuring the loss of weight in $g/cm^2 \cdot hr$. These methods have been applied in the papers on
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Method for studying the electrode ...

glass electrodes appearing in the same number of this periodical.

SUBMITTED: October 1962

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S/054/63/004/001/013/022
B101/B215

AUTHORS: Shul'ts, M. M., Peshekhonova, N. V., Kopuntsova, T. A., Shandalova, L. P.

TITLE: Effect of alkaline earth oxides on the electrode properties and chemical stability of sodium silicate glasses

PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 1, 1963, 114-120

TEXT: Sodium silicate glasses containing 15, 20, or 25 mole% of Na_2O and additions of 0 - 20 mole% BaO, CaO, MgO, or BeO were studied by plotting the curves E versus pH. Results: (1) The upper limit of the H^+ function is shifted into the alkaline region by BaO, hence, the total region of the H^+ function is extended. The exchange constant beomces 1-2 orders of magnitude smaller than that of the binary glass. (2) CaO increases the H^+ function range. In the acid region this increase is 1.5 - 2.0 pH units. The exchange constant becomes 1-2 orders of magnitude smaller. (3) MgO narrows the range of the H^+ function. At

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Effect of alkaline earth oxides on the ...

pH = 10 - 11, the Na^+ function is complete. The exchange constant becomes 1-2 orders of mangitude larger. (4) BeO has the same effect as MgO, but acts more intensively. Already 5 mole% BeO causes the formation of the Na^+ function. The exchange constant increases by 4 - 6 orders of magnitude. (5) Glasses containing BaO as their third component have the widest H^+ function range, whereas glasses containing BeO have the narrowest. (6) All alkaline earth oxides increase the stability of the glass to H_2O and 0.1 N HCl. The effect of alkaline earth oxides on the electrode properties of the glasses is explained by the mainly modifying effect of BaO. MgO and BeO, however, form strongly acid ionogenic $[RO_{4/2}]^{2-}$ groups, thus facilitating the substitution of alkali cation for proton. There are 2 figures and 5 tables.

SUBMITTED: October 1962

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SHUL'TS, M.M.; PESHEKHONOVA, N.V.; ROMANOVA, L.M.; ANDRIANOV, A.A.

Study of the electrode properties of lithium aluminosilicate glasses. Vest. LGU 17 no.16:108-115 '62. (MIRA 15:9)
(Electrodes, Glass)

S/054/62/000/003/007/010
B101/B186

5.4700

AUTHORS: Shul'ts, M. M., Peshekhonova, N. V., Romanova, L. M., Andrianov, A. A.

TITLE: Study of the electrode properties of lithium alumino silicate glasses

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PERIODICAL: Leningrad. Universitet. Vestnik. Seriya fiziki i khimii, no. 3, 1962, 103 - 115

TEXT: According to the generalized ion exchange theory of the glass electrode developed by B. P. Nikol'skiy (ZhFKh, 27, 5, 1953; DAN SSSR, 140, 641, 1961), the curve E = f(pH) may have steps if the glass contains hydrogen ions with bonds of different strength. This was checked on lithium alumino silicate glasses containing 24, 27, 30, or 33 mole% Li_2O and 0 - 6 mole% Al_2O_3. The curve E versus pH was plotted by measuring the emf of the following elements:

$(Pt)H_2$ 3 M LiOH,LiCl|saturated KCl solution, Hg_2Cl_2|Hg;

Ag|AgCl,0.1 N HCl|glass membrane|3 M LiOH,LiCl‖saturated KCl solution,

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Study of the electrod...

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Hg_2Cl_2 | Hg.

Results: (1) Lithium silicates without admixture of Al_2O_3 have an H^+ function from pH<1 to pH ≈10-11; at higher pH, transition to a Li^+ function occurs. (2) Even an admixture of 0.5 mole% Al_2O_3 inflects the E-versus-pH curve in the acid range; and at a higher Al_2O_3 content this inflexion extends to a horizontal section with a Li^+ function. (3) Glass electrodes with ≥3 mole% Al_2O_3 behave like Li^+ electrodes at pH 3 - 12. (4) This effect of Al_2O_3 decreases with increasing content of Li_2O in the glass; therefore, higher Al_2O_3 admixtures are necessary to obtain a Li^+ function. The measured values were well reproducible both with rising and falling pH. The behavior of lithium alumino silicate electrodes is explained by the formation of lattice points with excessive negative charges during the introduction of trivalent aluminum in the silicate lattice with the coordination number 4; in these lattice points, the hydrogen ions have no longer a covalent but a weaker bond. The following holds: $\varphi = \varphi^0 + 0.5\vartheta \log(a_{H^+} + Ka_{M^+}) - 0.5\vartheta \log[1/(a_{H^+} + \alpha Ka_{M^+}) + \beta_2/a_{H^+} + \alpha_2 Ka_{M^+})$.

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28736 S/020/61/140/003/018/020
B110/B101

AUTHORS: Nikol'skiy, B. P., Corresponding Member AS USSR, Shul'ts, M. M., Peshekhonova, N. V., and Belyustin, A. A.

TITLE: Particular electrode behavior of glasses containing two acid (glass-forming) oxides

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 3, 1961, 641 - 643

TEXT: Electrodes of alkali glasses with basic oxides (modifiers): Cs_2O CaO, BaO, La_2O_3, etc. have hydrogen function in a large pH interval: $\varphi = \varphi^o + \vartheta \log_{H^+}$ (1); ($\vartheta = (RT/F)\cdot 2.303$). By ion exchange: H^+(glass) + M^+(solution) $\rightleftharpoons$ H^+(solution) + M^+(glass) (2), the hydrogen function changes to the metal function at certain pH's (section a"'б' of the curve 1, Fig. 1). According to the ion exchange theory, curve 1 is described by $\varphi = \varphi^o + \vartheta \log(a_{H^+} + Ka_{M^+})$ (3), where K is the equilibrium constant of Eq. (2). The divergence from Eq. (3) observed in the a"'б' section, specifically when B_2O_3 is introduced (curve 2), is explained by the

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presence of hydrogen ions bound differently strong to the glass. When adding B_2O_3 or Al_2O_3, one obtains a glass electrode with metal function (curve 4). B and Al free glasses correspond to weak acids ($K \sim 10^{-12}$, curve 1). Curves 2 and 4 correspond to Na_2O-CaO-SiO_2 systems with additions of Al_2O_3, B_2O_3, and ZrO_2. In the section aa' (curve 3), the hydrogen ions are bound to the anions of strong and weak acids in glass phase. In the section a'б'''β", the hydrogen ions are replaced by weakly bound alkali-metal ions. These are bound stronger in section β"∂. The metal function is complete in ∂'β'''. This has been established experimentally in the ternary system Li_2O-Al_2O_3-SiO_2 with 0 - 3 mole% of Al_2O_3. Similar to Al_2O_3, B_2O_3 effects a differentiation in the system Na_2O-B_2O_3-SiO_2 at 0.1 N and 3 N Na-ion concentrations of the solution. With the curves representing the pH dependence of the potential, the vertical distance between the sections of the Na functions for glasses containing 6.6 and 9.4 mole% of B_2O_3 is: $\Delta E = \vartheta \log (a''_{NaCl}/a'_{NaCl}) = 83$ mv. Similar conditions were found for the following systems: $Li_2O - R_nO_m - SiO_2$ (R_nO_m

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Particular electrode... B110/B101

$= B_2O_3$, Ga_2O_3, ZnO_2); $Na_2O - R_nO_m - SiO_2$ ($R_nO_m = Al_2O_3$, Ga_2O_3, Fe_2O_3, GeO_2, SnO_2, TiO_2, ZrO_2, P_2O_5, Sb_2O_3, Bi_2O_3). The second hydrogen range due to the weaker acid disappears with a pH of 0 - 14, when relatively large amounts (3 - 9%) of Al_2O_3, Fe_2O_3, B_2O_3, and ZrO_2 are added (curve 4, Fig. 1). Thus, alkali-metals are bound in complex silicate systems by Al_2O_3, B_2O_3, and similar oxides. The established "differentiating effect" of a small quantity of acid oxide in glasses of simple composition is common to all glass-forming oxides and confirms the assumed binding and coordination of atoms of glass-forming elements according to M. M. Shul'ts (Ref. 18: Vestn. LGU, No. 22, 40 (1960)) and (Ref. 19: Stekloobraznoye sostoyaniye (the vitreous state), Izd. AN SSSR, 1960). There are 3 figures and 19 references: 15 Soviet-bloc and 4 non-Soviet-bloc. The most recent reference to the English-language publication reads as follows: Ref. 11: G. Eisenmann, D. O. Rudin, J. U. Casby, Sci., 126, 831 (1957).

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

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S/020/61/140/003/018/020
B110/B101

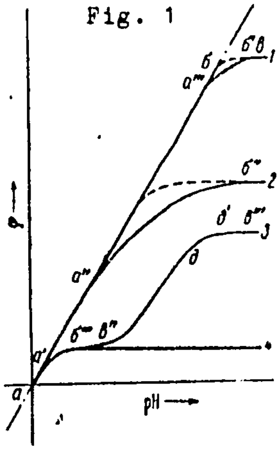
Particular electrode...

SUBMITTED: May 22, 1961

Fig. 1. Diagram of the electrode behavior of different glasses.

Legend: (1) Binary alkali-silicate glasses and glasses containing modifying ions; (2) complex glasses with glass-formers and modifiers; (3) simple glasses containing small quantities of a second glass-former; (4) glasses containing relatively large quantities of a second glass-former. The dotted sections of curves 1, 2 correspond to Eq. (3).

Fig. 1



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SOV/76-33-9-5/37

5(4)

AUTHORS: Nikol'skiy, B. P., Shul'ts, M. M., Peshekhonova, N. V.

TITLE: The Theory of the Glass Electrode. IX. The Application of the Ion-exchange Theory to Glass Electrodes With Different Metallic Functions

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 9, pp 1922-1927 (USSR)

ABSTRACT: The results of the investigations carried out so far (Refs 1-7) and of the paper under review permit the statement that glass electrodes (GE) assume a new electrode function through the exchange of the hydrogen ions of the sodium in the glass with cations from the solution, and thus change over from one metallic function to another. The experimental results of previous papers (Refs 6,7), obtained with (GE) of aluminum borosilicate glasses, are judged in the paper under review in conformity with the simple theory of the ion-exchange of the (GE). The theoretical change of the electromotive force (EMF) ΔE_T through concentration-changes of NaCl in the galvanic element

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The Theory of the Glass Electrode. IX. The Application of the Ion-exchange Theory to Glass Electrodes With Different Metallic Functions

$$\mathrm{Ag}\left|\begin{array}{c}\mathrm{AgCl,\ NaCl}\ (a)\\ \text{Inner Solution}\end{array}\right|\text{Glass membrane}\left|\begin{array}{c}\mathrm{NaCl}\ (a')+\mathrm{MCl,AgCl}\\ \text{Outer Solution}\end{array}\right|\mathrm{Ag}\quad(\mathrm{I})$$

was computed in conform with an equation (4), and compared with the experimental values of ΔE of (I) ($\Delta E = E' - E''$; difference of the experimental values of the (EMF) of (I), with E' representing the (EMF) at a concentration of the NaCl=1 in the outer solution) (Table values for ΔE with NaCl+HCl mixtures at various temperatures). Glasses of the following composition were used for the tests: Nr 1: 75% SiO_2, 3% Al_2O_3, 11% Ba_2O_3, 11% Na_2O; Nr 2: 71% SiO_2, 3% Al_2O_3, 11% Ba_2O_3, 15% Na_2O. For the tests with mixed NaCl+HCl solutions, data were taken from (Ref 9), while the coefficients of activity for experiments with NaCl+KCl and NaCl+LiCl solutions were calculated in conformity with the method by B. P. Nikol'skiy and V. A. Rabinovich (Ref 10). It was established that the simple ion-exchange theory is confirmed within the limits of the accuracy of measurements for the transition of the (GE) from a sodium-

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The Theory of the Glass Electrode. IX. The Application of the Ion-exchange Theory to Glass Electrodes With Different Metallic Functions

function to the potassium- or lithium-function. Some deviations of the experimental data from the theoretical values in the transition zone during the exchange of the Na-ions from glass with hydrogen ions from the solution, can be explained in conformity with the generalized ion-exchange theory (Ref 11), (as for glass of the type ES-1), by the presence of various types of bonds between the hydrogen ions and the silicate anions [illegible] glass. On the basis of previous investigations (Refs 8, 11) it was not possible to establish clearly whether the last mentioned difference of bonds is valid only for hydrogen ions or also for metal ions. The experimental data obtained indicate however that the transition of the (GE) from a metallic electrode function to the other responds also in the transition zone of the simple ion-exchange theory, i.e. that the ions of the sodium, potassium and especially of lithium (as distinct from hydrogen) show bonds equal in energy with the silicate lattice of glass. There are 3 figures, 1 table, and 11 references, 7 of which are Soviet.

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The Theory of the Glass Electrode. IX. The Application of the Ion-exchange Theory to Glass Electrodes With Different Metallic Functions

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: January 18, 1958

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