SOV/137-58-8-16635

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 55 (USSR)

AUTHORS: Mashovets, V.P., Revazyan, A.A.

TITLE: An Investigation of the Anode Process in Electrolysis of an Alumina-Cryolite Melt (Issledovaniye anodnogo protsessa pri elektrolize kriolito-glinozemnogo rasplava)

PERIODICAL: Tr. Vses. alyumin.-magn. in-ta, 1957, Nr 39, pp 288-306

ABSTRACT: Calculation of the relative content of various cations and anions in a melt containing 90 weight % of cryolite and 10 weight % of alumina shows fluorine-containing ions predominate over oxygen-containing (if the ion contents be expressed in percentage of the total number of ions of the given sign, and if it be assumed that the cryolite and alumina have undergone complete dissociation in accordance with the six most probable equations). If it be taken that the mean alumina contents of the melt are < 10 weight %, and if incomplete dissociation of the alumina be assumed, this predominance is even greater. Therefore, current is carried to the anode primarily by the fluorine-containing anions. The anode discharge, however, is effected

An Investigation of the Anode Process in Electrolysis (cont.)

cryolite-alumina melt, the emf of the $Al|Na_3AlF_6$, $Al_2O_3|O_2(Pt)$ and $Al|Na_3AlF_6$, $Al_2O_3|CO_2(C)$ circuits should correspond to the free energy of the reactions $4Al+3O_2 \rightarrow 2Al_2O_3$ (1) and $4Al+3CO_2 \rightarrow 2Al_2O_3+3C$ (2) under the condition that O_2 and CO_2, respectively, serve as the cathode current-forming substances in these circuits. To verify this last hypothesis, the emf of a series of galvanic circuits in molten cryolite saturated with alumina was measured by a compensation method at 1010-1060°C. In the first circuit, a constant 2.12-v emf was established immediately, and this corresponded to the free energy of reaction (1). This means that O_2 is the active electromotive substance in the cathode. The stable emf of a circuit with a (CO_2, Pt) electrode was reduced by 1.004 v as compared with the emf of a circuit with an (O_2, Pt) electrode, and this is in virtually exact agreement with the free energy of the $C+O_2=CO_2$ reaction. Measurement of the emf of currents with carbon dioxide cathode compels us to regard the theoretical voltage of decomposition of alumina with a carbon anode to be 1.115 v, and the higher values obtained experimentally to be ascribed to overvoltage. This value for decomposition voltage, which is in good agreement with the thermodynamic value for decomposition voltage, is confirmed by extrapolation of the I-V curves. 1. Electrolysis--Analysis 2. Anodes--Performance

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137-58-6-11487

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 33 (USSR)

AUTHORS: Svoboda, R.V., Mashovets, V.P.

TITLE: A Thermodynamic Evaluation of Possible Reactions Between Aluminum and Cryolite Melts (Termodinamicheskaya otsenka vozmozhnykh reaktsiy vzaimodeystviya aluminiya s krioli-tovym rasplavom)

PERIODICAL: Tr. Vses. alyumin.-magn. in-ta, 1957, Nr 39, pp 307-312

ABSTRACT: Thermodynamic calculations are presented making it possible to arrive at reasonably well-founded judgements relative to the probable occurrence of various reactions. Calculation of changes in the free energies (isobaric potentials) was done for 1300°K. Changes in the free energies of the reactions were calculated by the formula: $\Delta Z_{1300} = \Sigma \Delta Z_{1300\ prod} - \Sigma \Delta Z_{1300\ start}$. By use of the changes in free energies thus derived, the equilibrium constants were calculated by means of the equation for the isotherm of the chemical reaction $\Delta Z = -RT \cdot \log k$. To obtain comparable results, the calculations were made for a single redox equivalent, i.e., for the transfer of a single electron. For electrolytes having an NaF excess above

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137-58-6-11487

A Thermodynamic Evaluation (cont.)

that of cryolite, the following reaction is the most probable: $2NaF + 1/3\ Al \rightleftarrows 1/3\ Na_3AlF_6 + Na$. In baths having excess AlF_3, the most probable reaction is $1/2\ AlF_3 + Al \rightleftarrows 3/2\ AlF$ with the formation of a subfluoride. All these processes are regarded as chemical. They may also occur as electrochemical processes of cathodic reduction $Na + e \rightarrow Na$ and $Al^{3+} + 2e\ Al^{+}$, proceeding simultaneously with the basic processes of precipitation of Al and reducing the current efficiency.

I.G.

1. Aluminum--Processing 2. Aluminum--Chemical reactions 3. Cryolite--Processing 4. Cryolite--Chemical reactions

Card 2/2

137-58-6-11930

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 107 (USSR)

AUTHOR: Mashovets, V.P.

TITLE: Latent Resources of Electrolysis Departments and Reduction in the Cost of Aluminum (Rezervy elektroliznykh tsekhov i snizheniye sebestoimosti alyuminiya)

PERIODICAL: Tr. Vses. alyumin.-magn. in-ta, 1957, Nr 39, pp 326-336

ABSTRACT: Under the conditions prevailing in Soviet plants, the costs of raw material (alumina, fluorine salts, and carbon anode materials) constitute 50-67% of the cost of Al, power is 15-30%, and amortization of the equipment is 5.5-6.5%. From 4 to 7.5% of the cost represents direct labor wages and ∿7% is for general plant overhead. The alumina comprises 1/3 to 1/2 of the cost of the Al, fluorine salts are 3.5-5.5%, and anode material is 10-15%. Although the consumption of alumina, fluorine salts, and anode materials is close to the theoretical, economy of anode substance is possible at many plants. The possibilities of economies in the consumption of power, which is fairly constant and comes to 15.0-17.5 kwh/kg, are evident from the fact that the power-utilization coefficient in modern bath is ∿50%

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137-58-6-11930

Latent Resources of Electrolysis (cont.)

These possibilities fall into the fields of design and process procedures. Substitution of welded for bolted contacts is extremely effective. Reduction in voltage drop in "non-heating" resistances (leads) makes it possible to save from 0.15 to 0.30 v at many plants, while 0.12 to 0.27 v may be saved in the anode structure and 0.05 to 0.12 v per bath in the cathode plate; the total possible economy at these three points is from 0.3 to 0.65 v, representing a power saving of from 6 to 13%. A diminution in the distance between poles from 5-5.5 to 4-4.5 cm would reduce the voltage on the bath by 0.2 v. The extra voltage of arc-overs may be reduced from 0.15-0.35 v, i.e., 7% of the total voltage, to 0.075 v per bath. A total of all the possibilities of saving power inherent in enlargement of bath current from 70,000 to 120,000-150,000 amps, rationalization of bath design, and improvement of the process procedure shows that unit power consumption may be cut to 14.5 kwh/kg, yielding a 15% economy relative to the present rate of consumption, or 4-5% of the total cost of the Al.

I.G.

1. Aluminum--Production 2. Aluminum--Costs 3. Electrolytic cells--Performance
4. Electrolysis--Economic aspects
Card 2/2

20-6-29/59

AUTHOR: MASHOVETS, V.P., BELETSKIY, M.S., SAKSONOV, Yu. G., and SVOBODA, R.V.

TITLE: On an New Compound in the NaF - AlF_3 .

(O novom soyedinenii v sisteme NaF - AlF_3. Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 6, pp 1290 - 1292 (U.S.S.R.)

ABSTRACT: The diagram of the state of the fluorine-sodium-fluorinealuminium-system has often been studied since the cryolite formed on this occasion is the main component of the electrolyte which is used for the electrolytic winning of aluminium from its oxide. By earlier investigations it was found that in this system also chiolite develops besides cryolite (according to data: $Na_5Al_3F_{14}$ or $Na_3Al_2F_9$).

The conclusion concerning the sole existence of cryolite and chiolite was repeatedly confirmed in contrast to theoretical computations according to which an equimolecular compound: $MeAlF_4$ is supposed to have the most stable aluminum configuration. The existence of such a compound with potassium as well as with univalent thallium and rubidium was already proved. Nothing is known about sodium compounds (with the exception of $NaAlF_4.H_2O$) Apart from Howard, the authors obtained $NaAlF_4$ in the condensate of the destillation vapors from cryolite-alumina-melting in an argon atmosphere at 1200°. The greatest quantities were found in vapors of meltings which had a molecular

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20-6-29/59

On a New Compound in the NaF - AlF_3.

ratio of NaF : AlF_3 = 1,67 to 1.00. This is the domain which corresponds to the so-called "sour- electrolytes". O It can be assumed that in normal conditions this compound is very unstable and is only partly conserved in the presence of argon and other gases. The interference-maxima of chiolite and fluorine alumimun were determined in radiograms. The not identified maxima left after their elimination which were characteristic of the crystal lattice of the new phase used for calculations. The obtained data were approximated to the constants of theknown lattice of the compounds of the type $MeAlF_4$. Theoretical values of the intensities of the interference maxima were calculated in order to find out whether sodium tetraluminate has the same crystal lattice as the rubidium-, thallium-, and potassium compounds which are isomorpheus with it. The obtained results show satisfactory agreement. Therefore it can be assumed that sodium-tetrafluoralluminate has a similar crystal lattice as the aforementioned isomorpheus compounds. Attention must be paid to some deviations of the theoretical intensity values from those obtained experimentally. A further still unknown compound may be concerned. Also a deformation of the tetrahedron of 6 fluorine atoms is possible. It is not impossible that just this is the reason for the instability of sodium-tetrafluoraluminate. An analogous lithium-compound is like-

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On a New Compound in the NaF - AlF_3. 20-6-29/59

ly to be still more instable. (1 illustration, 5 Slavic references).

SSOCIATION: Allunion-Scientific Research Institute for Aluminum and Magnesium, Leningrad.
(Vsesoyuznyy nauchno-issledovatel'skiy aluminiye-vo-magniyevyy institut, Leningrad).
RESENTED BY: FRUMKIN, A.N., Member of the Academy.
UBMITTED: 7 January 1956
VAILABLE: Library of Congress

ard 3/3

SOV/136-58-11-11/21

AUTHORS: Korobov, M.A.
Mashovets, V.P.

TITLE: Modelling the Electrical Field of an Aluminium-Electrolyzer Anode (Modelirovaniye elektricheskogo polya anoda alyuminiyevogo elektrolizera)

PERIODICAL: Tsvetnyye Metally, 1958, Nr 11, pp 60-66 (USSR)

ABSTRACT: In modelling the electrical field of an anode of an aluminium electrolyzer one important difficulty is the production of a medium with a variable electrical conductivity. The authors have adopted the technique of M.F.Dorgamidzhi (ref.2) in which change in conductivity is produced by the introduction of non-conductivity (ebonite) spheres into the conducting liquid. A stepwise gradation of conductivity, based on data from a working electrolyzer (ref.4) was used. For modelling pins with the required conductivity thin enamelled copper wire was wound on a non-conducting model of the pin, the outside surface of the wire then being carefully cleaned; by using different gauges of wire changes in conductivity due to

Card 1/2 temperature changes were represented. Anodic

Modelling the Electrical Field of an Aluminium-Electrolyzer Anode

polarization arising in copper sulphate solution was used to represent the contact resistance between the pin and the body of the anode, the value obtained with a solution containing 160 g $CuSO_4$ and 10 ml of H_2SO_4 (density 1.8 g/cm³) per litre being sufficiently accurate. It was found preferable when using the installation (fig.1) to assume even burning of the anode and constant composition of the primary anode gas. Resistance boxes and a wire gauze electrode were used to produce the boundary conditions at the bottom surface of the anode, the resistances produced being about 100 times those of the region being modelled and a closer approach to reality being obtained by grading the resistances. The size scale of the model was 1/5, the corresponding values for the conductivity of the anode and the pin being 1/1000 and for the contact conductivity 1/360. The correctness of the scaling factors was supported by the fairly close agreement between the model and practical relations between the current strength in the pins and the distance from the pins to the bottom of the anode (fig.2).

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SOV/136-58-11-11/21

Modelling the Electrical Field of an Aluminium-Electrolyzer Anode

The changes in potential-drop in the anode as determined in the model are shown as functions of position in the anode for various anode widths and pin arrangements for lengths of the working part of the pins of 50 cm (fig.3), 75 cm (fig.4) and 100 cm (fig.5). The authors assess the accuracy of the potential-drop estimates made by their technique at 3-5% and they have shown that with side leads the fall in the voltage in the anode and the difference of potentials at its bottom surface fall with increasing pin length and rise with increasing anode width. There are 4 figures, 1 table and 6 references, all Soviet.

ASSOCIATION: VAMI

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24(6)

SOV/[illegible]-2-10-4/40

AUTHORS: Mashovets, V. P., Korobov, M. A.

TITLE: Conditions for the Electrical Modeling of a Thermal Field With Internal Heat Sources (Usloviya elektricheskogo modelirovaniya teplovogo polya s vnutrennimi istochnikami tepla)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, Vol 28, Nr 10, pp 2124-2129 (USSR) 1958

ABSTRACT: The method which has hitherto been used for the electrical modeling of thermal fields can only be applied to the Laplace (Laplas) field (which incorporates no internal heat sources). In practical engineering, however, cases are frequently found of systems with internal heat sources or sinks in the process medium. A practical example of this is the investigation of the temperature field in a furnace for electrode graphitization which was carried out by Volynskiy (Ref 4). Such furnaces often are operated with a control. Hence this paper is limited to such cases, and all quantities refer to unit time. The "critical" equation holding for the internal domain and for the boundary conditions of the electric field, which is the model for the temperature field with internal sources, is deduced. The model must satisfy the conditions (16) or (17) and, besides, the

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Conditions for the Electrical Modeling of a Thermal Field Wit nternal Heat Sources

respective boundary conditions of first, second, and third order must be given. The first order condition is furnished by the temperature T_S on the surface S. The second order boundary condition makes use of equation (17) which holds within, and on the boundaries of the domain. The boundary conditions of third order are given by the conditions of convectional heat exchange. A practical example was afforded by the temperature field of a continuously burning self-consuming anode of the electrolyzer used in aluminum production. There are 6 references, 6 of which are Soviet.

SUBMITTED: July 16, 1958

Card 2/2

MASHOVETS, V.P.

Testing battery plates made of alloys with admixtures. Zhur. prikl. khim. 31 no.9:1355-1360 S '58. (MIRA 11:10)
(Storage batteries--Testing)

MASHOVETS, V.P.; YEGOROV, I.M.

Discharge of hydroxyl ions on a graphite anode at high temperature. Trudy LTI no.46:21-35 '58. (MIRA 14:4)
(Electrodes, Carbon) (Hydroxyl ion)
(Electrochemistry)

MASHOVETS, V. P.

[illegible]

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...; [sbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.N. Frumkin (Resp. Ed.) Academician, O.A. Yesin, Professor; S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, Ya. M. Kolotyrkin, Doctor of Chemical Sciences; V.V. Losev, P.D. Lukovtsev, Professor; Z.A. Solov'yeva; V.V. Stender, Professor; and G.M. Florianovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodepositon and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included here have been published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

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APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001032720010-5"

5(0)

AUTHORS: Mashovets, V. P., Ponomareva, A. M. SOV/153-2-2-31/31

TITLE: Chronicle. All-Union Competition for the Best Students-paper Concerning Chemistry and Chemical Technology for the Scholastic Year 1957-1958 (Khronika. Vsesoyuznyy konkurs na luchshuyu studencheskuyu rabotu po khimii i khimicheskoy tekhnologii za 1957-1958 uchebnyy god)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 2, pp 303-304 (USSR)

ABSTRACT: The Ministerstvo vysshego obrazovaniya SSSR (Ministry for University-education of the USSR) carried out the competition mentioned in the title, within the framework of the Studencheskiye nauchnyye obshchestva (Scientific Student Societies) covering 37 subjects of science, technology, arts, and culture. The Leningradskiy tekhnologicheskiy institut imeni Lensoveta (Leningrad Technological Institute imeni Lensovet) was entrusted with the subject "Chemistry and Chemical Technology". A commission was formed consisting of Professor V. B. Alekkovskiy, V. P. Mashovets (Chairman), I. P. Mukhlenov, A. A. Petrov, B. A. Poray-Koshits, Docent P. A. Yablonskiy, and Candidate of Chemical Sciences

Chronicle. All-Union Competition for the Best Students-paper Concerning Chemistry and Chemical Technology for the Scholastic Year 1957-1958 SOV/153-2-2-31/31

A. M. Ponomareva (Secretary). The following persons acted as critics: The Professors A. F. Alabyshev, A. M. Ginstling, I. S. Ioffe, M. I. Knyaginichev, L. Ya. Kremnev, A. B. Kusov, A. M. Malkov, I. N. Maslenitskiy, K. P. Mishchenko, Yu. V. Morachevskiy, with the collaborators, N. N. Nepenin, Yu. K. Novodranov, V. V. Perekalin, A. L. Rotinyan, A. V. Satalkin, A. V. Storonkin, and T. A. Favorskaya with collaborators, A. M. Khaletskiy; Docents: A. Ye. Akim, L. M. Batuner, M. I. Gil'dengershel', O. F. Ginzburg, I. A. D'yakonov, S. G. Zhavoronok, S. N. Zhilov, Ye. S. Roskin, P. N. Sokolov, N. P. Starostenko, M. M. Sychev, A. T, Troshchenko; Chief scientific reseacher B. F. Ioffe; Candidates of Sciences: G. A. Bel'chenko, M. K. Bynyayeva, O. N. Setkina, B. P. Yur'yev; Engineers: Kostyreva, Senyusheva, and Yarmolinskiy. The paper "Synthesis and Self-oxidation of the p-Di-Secondary Butyl-benzene" by V. S. Zavgorodniy, Fifth-year student of the Voronezhskiy gosudarstvennyy universitet (Voronezh State University) was awarded a medal for being the best. The second candidate for the medal is the

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Fifth-year-student of the Kiyevskiy gosudarstvennyy universitet (Kiyev State University) K. F. Lyashev. He submitted the paper "Kinetics of the Non-stationary Catalytic Decomposition-process of Hydrogen-peroxide on Platinum". The third medal was awarded to the Fourth-year-students of the Ivanovskiy khimiko-tekhnologicheskiy institut (Ivanovo Chemical-technological Institute): D. V. Nebova, A. I. Sotnikova, T. T. Simagina, and R. M. Sutyagina for the paper: "Method of Continuous Regeneration of Zinc-chloride From Waste Water of the Kineshma Fibre Factory". Besides these three papers, the commission selected further 8 papers which deserve publication owing to their maturity and originality. The papers are: "Utilization of Phosphorous Gypsum for the Production of Local Construction-binding Materials" by the Fourth-year-students of the Ivanovo Institute (see above): A. V. Tochilova and A. A. Fadeyeva; "Study of the Influence of the Dispersion of Polymer Particles, When Being Disintegrated, on the Molecular Weight" by the Third-year-student of the Moskovskiy

tekhnologicheskiy institut legkoy promyshlennosti (Moscow Technological Institute for Light Industry) V. N. Gorodilov; "Study of the Cathodical Polarization at the Precipitation of Chromium From Sulphide-solutions" by the Fifth-year-student of the Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute) V. G. Petropavlovskiy; "Gold Extraction From Watery Cyanide-solutions" by the Fifth-year students of the Moskovskiy khimiko-tekhnologicheskiy institut imeni D. I. Mendeleyeva (Moscow Chemical-technological Institute imeni D. I. Mendeleyev) A. V. Ochkin, V. A. Borisov, and M. Mrnk; "Some Investigations of the Vulcanisates of Rubbers Containing Carboxyl" by the Fourth-year-students of the Yaroslavskiy tekhnologicheskiy institut (Yaroslavl' Technological Institute) G. I. Komarova and T. A. Shchadricheva; "Investigation of the Cathodic and Anodic Processes at Gold-plating" by the Fifth-year-student of the Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institute imeni Lensovet) R. A. Nosova; "Spectral Determination of Molybdenum and Tungsten in Tri-hetero-polyacids"

Chronicle. All-Union Competition for the Best Students-paper Concerning Chemistry and Chemical Technology for the Scholastic Year 1957-1958 SOV/153-2-2-31/31

by the Third-year-student of the Kishinevskiy gosudarstvennyy universitet (Kishinev State University) V. A. Dagayev; "Capture of Dichlorine-ethane by Bone-fat in Foam-condition" by the Fourth-year-students of the Kazanskiy khimiko-tekhnologicheskiy institut (Kazan' Chemical-technological Institute) L. I. Yashina, R. A. Nurutdinov, and T. G. Siraznev. Taken collectively, the competition has shown a high standard of the scientific research work in the circles of the Studencheskoye Nauchnoye obshchestvo (Scientific-student-societies) of many universities.

Card 5/5

MASHOVETS, V.P.; NOVIKOVA, N.A.

Chemical stability of molten cryolite. Izv.vys.ucheb.zav.; tsvet.met. 2 no.4:83-87 '59. (MIRA 13:1)

1. Leningradskiy tekhnologicheskiy institut. Kafedra fizicheskoy khimii.
(Cryolite) (Chemistry, Metallurgic)

5.4300,5.4700,5.1310

75656
SOV/80-32-10-5/51

AUTHORS: Mashovets, V. P., Svoboda, R. V.

TITLE: Reaction of Aluminum With Cryolite-Alumina Melts

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2157-2164 (USSR)

ABSTRACT: This is a study of the above reaction by thermodynamic calculations and experimentally. Table 1 gives Gibbs free energies ΔZ_{1300} and equilibrium constants calculated for all possible reactions of Al with neutral Na_3AlF_6 and with basic and acid melts containing excess NaF and AlF_3. As the free energies indicate, reactions (1) to (5) cannot occur spontaneously; reaction (6) (which is the sum of (8) and (9)) and reaction (11) can be driven to the right, despite their high free energies, by the high vapor pressures of the products at

Table 1
Changes in isobaric potentials and equilibrium constants of reactions between Al and the melt components

Reaction Nr	Reaction	ΔZ_{1300} (kcal)	K_p
1	$^1/_3Na_3AlF_6 + ^1/_3Al \rightleftarrows ^2/_3AlF_3 + Na$	22.0	$1.6 \cdot 10^{-4}$
2	$^1/_3Na_3AlF_6 + Al \rightleftarrows ^3/_2NaF + ^3/_2AlF$	21.4	$2.5 \cdot 10^{-4}$
3	$^1/_5Na_3AlF_6 + Al \rightleftarrows ^6/_5AlF + ^3/_5Na$	22.2	$1.9 \cdot 10^{-4}$
4	$^1/_3Na_3AlF_6 + Al \rightleftarrows ^1/_3AlF_3 + AlF + Na$	28.9	$1.3 \cdot 10^{-5}$
5	$^1/_3Na_3AlF_6 + ^1/_2AlF \rightleftarrows ^5/_6AlF_3 + Na$	19.4	$5.5 \cdot 10^{-4}$
3	$2NaF + ^1/_3Al \rightleftarrows ^1/_3Na_3AlF_6 + Na$	6.8	$7.3 \cdot 10^{-2}$
7	$NaF + ^1/_3Al \rightleftarrows ^1/_3AlF_3 + Na$	14.7	$3.4 \cdot 10^{-3}$
8	$NaF + Al \rightleftarrows AlF + Na$	21.0	$2.7 \cdot 10^{-4}$
9	$^5/_2NaF + ^1/_2AlF \rightleftarrows ^1/_2Na_3AlF_6 + Na$	−0.3	1.1
10	$NaF + ^1/_2AlF \rightleftarrows ^1/_2AlF_3 + Na$	11.5	$1.2 \cdot 10^{-2}$
11	$^1/_3AlF_3 + Al \rightleftarrows ^3/_2AlF$	9.6	$2.5 \cdot 10^{-2}$

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SOV/80-32-10-5/51

Al samples were heated to 1,020° for 4 hr. Argon blown over the crucibles entrained the sublimates through perforated Cu foil screens on which AlF decomposed to form an Al-Cu alloy at 950-1,000°. AlF was determined as Al in the alloy; NaF, AlF_3, and Na were determined in the condensate which was also X-ray analyzed; Al losses were ascertained by residue weighing. Conclusions: Al reduction of AlF_3 to AlF takes place both in the alkaline and in the acid regions, but its rate increases with decreasing NaF/AlF_3 ratio. Al reduces NaF to Na_2F and Na only in the basic region where Al is oxidized to AlF_3 and partly to AlF. AlF evaporates before it can react with NaF. Al losses vs melt composition are shown in Fig.1.

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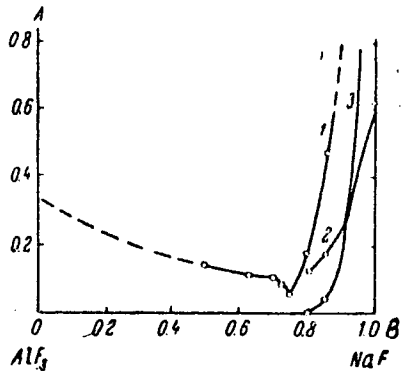
Reaction of Aluminum With Cryolite-Alumina Melts

7565/
SOV/80-32-10-5/51

Fig.1. Results of Al melting under electrolytes in sintered-corundum equipment: (A) amount of substance (g); (B) NaF content in the electrolyte (mole fractions). (1) Al losses; sublimate content: (2) Al, (3) Na.



Experiments in the presence of C: 1,060 and 1,150° for 3, and 1 to 5 hr. Al and salt-phase losses were determined by weight; Al and AlF content of the solidified melt was found by gas volumetry; melt composition changes were detected by titration; graphite-dissolved Na, Al, and F were determined by residue analysis after combustion. Na was calculated as NaF, residual F as AlF_3, excess Al as Al_2O_3 or AlC_3; the arbitrariness of this method is recognized. Data from tests using Pt crucibles established weight loss and composition changes due solely to evaporation, and were used to correct the carbon-crucible experimental results. Figure 3 shows Al losses vs melt composition. Conclusions: Owing to the formation of NaC_x-type compounds, C activates the Al reduction of NaF to form Na even .ighly acid melts. Beletskiy, M. S., Saksonova, Yu. G., Potapova, T. A., and Zakharov, Ye. L., took part in the experiment. There are 2 tables; 4 figures; and 2 Soviet references.

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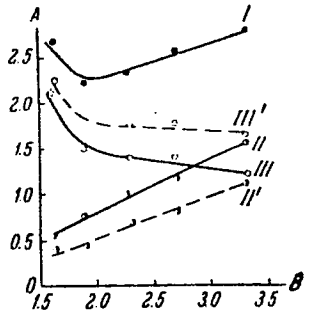

Fig. 3. Al losses vs electrolyte composition, melting in graphite crucibles: (A) Al loss (g); (B) melt composition (moles NaF/moles AlF_3). (I) Total losses; Al consumed on: (II) reduction to Na, (II') reduction of NaF to Na_2F, (III) AlF formation (if NaF is reduced to Na), (III') on AlF formation (if Na_2F is formed).

Reaction of Aluminum With Cryolite-Alumina Melts

75656
SOV/80-32-10-5/51

SUBMITTED: November 26, 1958

Card 7/7

5.1310

77640
SOV/80-33-2-15/52

AUTHORS: Volova, Ye. D., Maksimova, I. N., Mashovets, V. P., and Fomichev, V. G.

TITLE: Electrolytic Preparation of Thallium Amalgam for Low-Temperature Thermometers

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 2, pp 349-354 (USSR)

ABSTRACT: Electrolytic preparation of thallium amalgam was studied to determine optimum conditions for the process. The materials used were: purified and vacuum-distilled mercury (and brand P-2 mercury); thallium sulfate of composition: Tl_2SO_4, 99.9%; Fe, 0.001%; Cu, 0.005%; water insoluble impurities 0.01%, impurities precipitable with NH_2OH 0.01%, those not precipitable with $(NH_4)_2S$ 0.01%; and metallic thallium (for preparation of amalgam by direct

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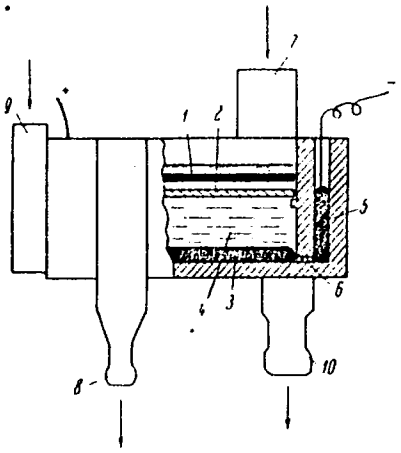
dissolution of Tl in mercury) containing Tl, 99.8%; Zn, 0.004%; Cd, 0.02%; Cu, 0.006%; Pb, 0.005%; and Fe, 0.001%. Figure 1. shows the cross section of the electrolyzer.

Fig. 1



Card 2/8 See Card 3/8 for caption.

Caption to Fig. 1.

Fig. 1. Cross section of the electrolyzer: (1) anode; (2) pressed fiberglass membrane; (3) flowing mercury cathode; (4) the electrolyte; (5) outlet from cathode; (6) platinum contact; (7) inlet for the electrolyte; (8) electrolyte drain; (9) inlet for the mercury; (10) amalgam drain.

Content of thallium in amalgam was determined by potentiometric titration with 0.01 N $KBrO_3$ of 0.2-0.5 g amalgam samples dissolved in dilute sulfuric acid. Results obtained by the use of a platinum wire anode (with a surface area of 2.5 cm^2) were compared with the results with a lead anode (a perforated horizontal plate of $\sim$ 30 cm^2 surface). Cathodes with an area of 5.7 and 30 cm^2 in the first case, and 30 cm^2 in the second were used. In the

case of platinum anode 95-100% thallium yield based on current were reached at all investigated temperatures (20-45°), cathodic current densities (12-50 ma/cm^2), acidities of initial solution (0.001 to 1.33 g-equiv/l) and flowrates, w, of the solution from $w_{theoret}$ (in l/min) to 5 $w_{theoret}$ at the optimum composition of the electrolyte (high Tl^+ concentration and low acidity). $w_{theoret}$ was calculated from Tl concentration and current, taking complete Tl extraction and yield based on current as 100%. Figure 1 shows that the degree of thallium utilization (in amalgam) is inversely proportional to the flowrate of the solution.

Electrolytic Preparation of Thallium Amalgam for Low-Temperature Thermometers

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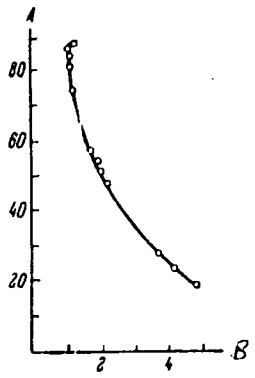

Fig. 2. Degree of thallium utilization (in %): (A) as a function of solution flowrate; (B) --$w_{actual}/w_{theoretical}$ -- in electrolysis with a platinum anode.

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Electrolytic Preparation of Thallium Amalgam for Low-Temperature Thermometers

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The output is lowered with decreasing thallium concentration (by lowering concentration of Tl from 40.5 to 8.5 g/l, the yield based on current dropped from 98.0 to 64.5% and degree of thallium utilization from 86.0 to 50.2%) and with increasing acidity (at [H] 1.33 g-equiv/l compared to the optimum ≤ 0.01 g-equv/l the yield dropped to 70.6%). Experiments with a lead anode show that the process gives lower outputs than with platinum anode, is accompanied by thallium oxidation to Tl_2O_3 and is more sensitive to changes in temperature (rise in temperature increases thallium yield and utilizaton and decreases oxidation), current density (increase of current density raises Tl yield and utilization somewhat with a maximum at 50 ma /cm^2; a subsequent decrease in yield is probably caused by increasing evolution of hydrogen at the cathode) and flowrate (increasing flowrate somewhat decreases oxidation, increases Tl yield and decreases degree of utilization). Unfavorable results

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Electrolytic Preparation of Thallium Amalgam for Low-Temperature Thermometers

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obtained by the use of lead anode are caused by its large surface area and high overvoltage. Experiments on electrolysis with a smaller lead anode resulted in overheating of electrolyte and decomposition of anode. On the basis of experimental results the authors recommend the use of a platinum anode with a small surface area. Optimum conditions: the electrolyte containing 40.5 g/l of Tl^+ and $\leq$ 0.01 g-equiv/l of free H_2SO_4; temperature 20-40°; cathodic current density 35-50 ma/cm^2; and the flowrate of the solution 1.02-1.05 $w_{theoret}$. In electrolysis on the lead anode temperature of 60-65° and current density of 50-70 ma/cm^2 should be used. Preparation of thallium amalgam by dissolving thallium in mercury (at room temperature, under glycerin or water) is a simpler process than electrolysis, but the amalgam prepared by the latter process is supposed to be of greater purity. The amalgams prepared by both processes have been submitted for tests in low-temperature thermometers

Electrolytic Preparation of Thallium Amalgam for Low-Temperature

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SOV/80-33-2-15/52

There are 5 figures; 1 table; and 13 references, 3 Soviet, 5 German, 1 U.K., 4 U.S. Abstracter's Note: There are 12 references listed in the article but one of them was broken down into two. The U. K. and U.S. references are: D. Mac-Intosh, F. M. Johnson, J. Am. Chem. Soc., 34, 941 (1910); J. Ehrenreich, Instruments & Automation, 27, 1070 (1954); F. W. Richards, C. Smith, J. Am. Chem. Soc., 44, 524 (1922), 45, 1455 (1923); F. Singch, J. Indian. Chem. Soc., 13, 717 (1936); F. W. Richards, F. Daniels, J. Am. Chem. Soc., 41, 1732 (1919).

ASSOCIATION: Leningrad Lensovet Technological Institute (Liningradskiy tekhnologicheskiy institut imeni Lensoveta)

SUBMITTED: February 25, 1959

Card 8/8

S/076/60/034/008/026/039/XX
B015/B063

AUTHORS: Mashovets, V. P. and Pomichev, V. G.

TITLE: Study of a Cylindrical and a Spherical Bipolar Electrode

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1795 - 1801

TEXT: Many commercial electrolyzers have conductive parts as bipolar interelectrodes, such as metallic walls of cells, metallic grid diaphragms, valves, and metal grains or coal particles in electrolytes used for fusion electrolysis. The effect of electrode polarization and polarizability upon the current distribution on cylindrical and spherical bipolar electrodes has now been studied. A method is given for the calculation of the current flowing through a cylindrical or spherical electrode which is placed in a uniform electric field. It was assumed that the polarization was equivalent to the additional resistance which was uniformly distributed in the bipolar electrode. Calculations made for the current density distribution on the cylindrical electrode were experimentally verified. Various electrolytes, such as copper and nickel-sulfate

solutions, sulfuric acid, and boric acid, were examined by means of a cylindrical or spherical copper or nickel electrode. The experimental values obtained from the copper electrode were in good agreement with the calculated values, while agreement was less good with the highly polarizable nickel electrode. The participation of a bipolar electrode in the current density distribution depends on three factors: 1) resistivity of the solution; 2) cathodic and anodic polarization; and 3) polarizability and dimensions of the bipolar electrode. There are 7 figures, 3 tables, and 7 Soviet references.

ASSOCIATION: Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institute imeni Lensovet)

SUBMITTED: November 21, 1958

MASHOVETS, V.P.; FOMICHEV, V.G.

Current distribution in electrochemical systems with a bipolar electrode. Zhur. fiz. khim. 34 no. 11:2587-2595 N '60. (MIRA 14:1)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta.
(Electrodes) (Electric currents)

MASHOVETS, V.P.; YEGOROV, I.M.

Anodic oxidation of graphite in a sodium metaphosphate melt.
Trudy LTI no.61:77-87 '60. (MIRA 15:5)
(Sodium metaphosphate) (Electrodes, Carbon) (Electrochemistry)

MASHOVETS, V.P.; YEGOROV, I.M.

Anodic processes on graphite in a potassium dichromate melt.
Trudy LTI no.61:88-94 '60. (MIRA 15:5)
(Electrodes, Carbon) (Potassium dichromate) (Electrochemistry)

YEGOROV, I.M.; MASHOVETS, V.P.

Mechanism of the anodic process on graphite in nitric acid solution. Trudy LTI no.61:95-103 '60. (MIRA 15:5)
(Electrodes, Carbon) (Nitric acid) (Electrochemistry)

MASHOVETS, V.P.; LOKSHINA, A.S.; MAKSIMOVA, I.N.

Anodic processes on platinum and lead anodes during the electrolytic production of thallium amalgam. Trudy LTI no.61:104-109 '60. (MIRA 15:5)
(Thallium) (Amalgams) (Electrochemistry)

FOMICHEV, V.G.; MASHOVETS, V.P. (Leningrad)

System with bipolar electrodes in the form of a complex of circular cylinders. Zhur. fiz. khim. 35 no. 4:803-808 Ap '61. (MIRA 14:5)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta.
(Polarization (Electricity))

MASHOVETS, V.P.; NOVIKOVA, N.A.

Chemical stability of molten cryolite. Izv. vys. ucheb. zav.; tsvet. met. 5 no.2:78-80 '62. (MIRA 15:3)

1. Leningradskiy tekhnologicheskiy institut, kafedra fizicheskoy khimii.
(Cryolite--Thermal properties) (Vapor liquid equillibrium)

YUDIN, B.F.; MASHOVETS, V.P.

Thermodynamic properties of melts in the system AlF_3 - NaF.
Izv. vys. ucheb. zav.; tsvet. met. 5 no.5:54-61 '62. (MIRA 15:10)

1. Leningradskiy tekhnologicheskiy institut, kafedra fizicheskoy khimii.
(Cryolite—Thermal properties) (Aluminum—Electrometallurgy)

MAKSIMOVA, L.N.; MASHOVETS, V.P.; VOLKOVA, A.V.

Cathodic processes during electrolysis of mixed solutions of univalent and trivalent thallium sulfates. Zhur.prikl.khim. 36 no.3:565-571 My '63. (MIRA 16:5)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Thallium sulfate) (Electrolysis)

YUDIN, B.F.; MASHOVETS, V.P.

Molecular state of melts of the system AlF_3 - NaF - Al_2O_3. Zhur.-prikl.khim. 36 no.6:1244-1250 Je '63. (MIRA 16:8)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Cryolite—Thermodynamic properties) (Aluminum oxide)

DIBROV, I.A.; MASHOVETS, V.P.; FEDOROV, M.K.

Method of measuring the saturated vapor pressure and density of aqueous solutions at temperatures up to 350°C and pressures up to 200 kg cm^2. Zhur.prikl.khim. 36 no.6:1250-1253 Je '63. (MIRA 16:8)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Solution (Chemistry)) (Vapor pressure)

DIBROV, I.A., MASHOVETS, V.P.; MATVEYEVA, R.P.

Density and compressibility of sodium hydroxide aqueous solutions at high temperatures. Zhur.prikl.khim. 37 no.1:29-36 Ja '64. (MIRA 17:2)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

DIBROV, I.A.; MAL'TSEV, G.Z.; MASHOVETS, V.P.

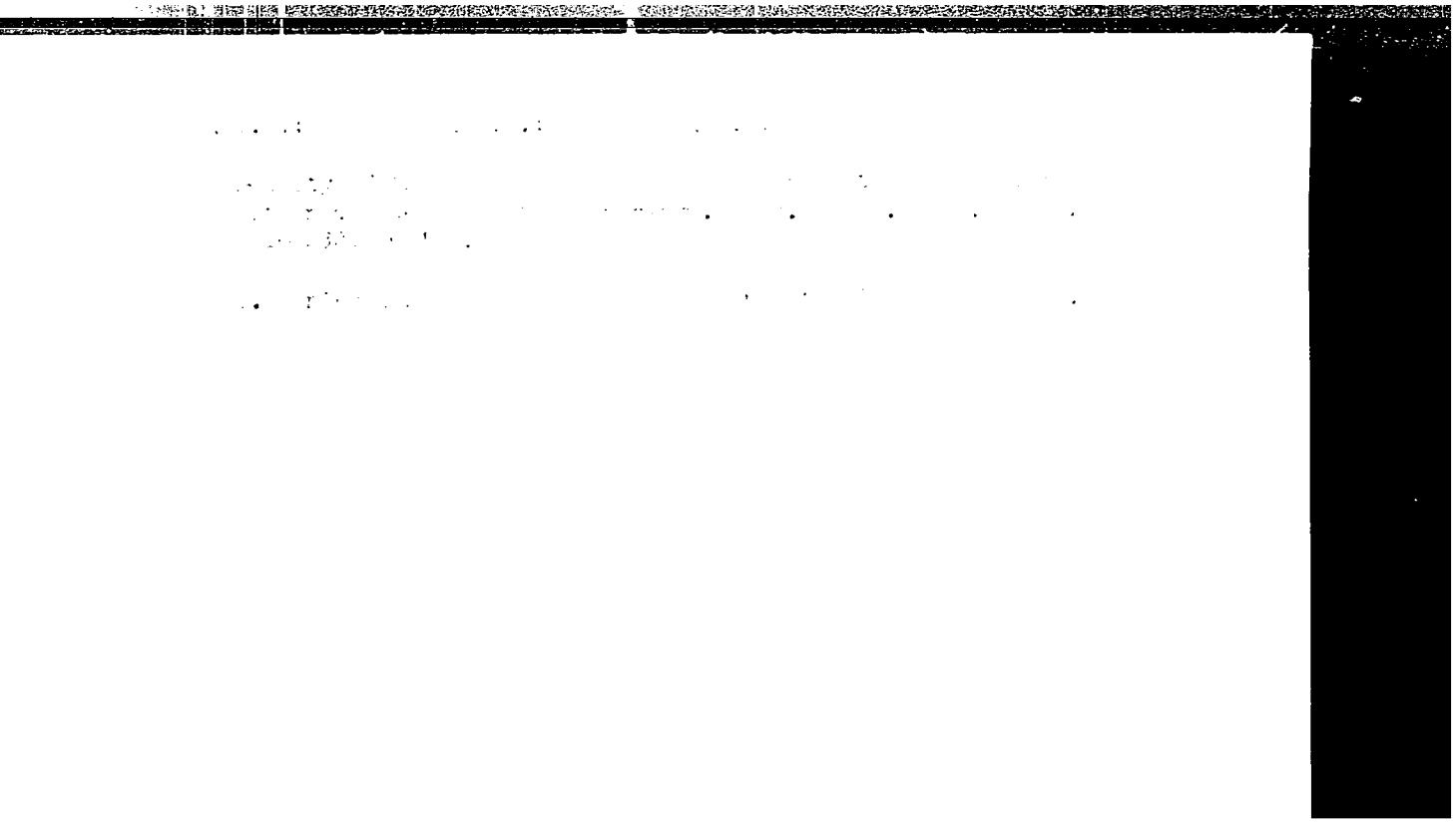
Saturated vapor pressure of caustic soda and sodium aluminate solutions within 25-350° in a wide range of concentrations. Zhur. prikl. khim. 37 no.9:1920-1929 S '64. (MIRA 17:10)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

MASHOVETS, V.P.; PODDYMOV, V.P.

Thermodynamic properties of cadmium solutions in fused cadmium bromides and iodides. Zhur. prikl. khim. 37 no.6:1268-1272 Je '64. (MIRA 18:3)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.



KRUMGAL'Z, B.S.; MASHOVETS, V.P.

Apparatus for determining the saturated vapor pressure and density of solutions at higher temperatures within a wide range of concentrations. Zhur. prikl. khim. 37 no.11:2398-2401 N '64 (MIRA 18:1)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

KRUMGAL'Z, B.S.; MASHOVETS, V.P.

Density of concentrated solutions of NaOH (higher than 45% weight) at temperatures up to 400° C. Zhur. prikl. khim. 37 no.12:2596-2600 D '64. (MIRA 18:3)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

KRUMGAL'Z, B.S.; MASHOVETS, V.P.

Saturation vapor pressure of sodium hydroxide solutions (with concentrations higher than 45 percent) at temperatures up to 400° C. Zhur. prikl. khim. 37 no.12:2750-2752 D '64. (MIRA 18:3)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

MAL'TSEV, G.Z.; MALININ, G.V.; MASHOVETS, V.P.; SHCHERBAKOV, V.A.

Thermodynamic properties and nuclear magnetic resonance spectra of H^1 and Na^{23} of caustic soda solutions. Zhur. struk. khim. 6 no.3:371-377 My-Je '65. (MIRA 18:8)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta i Radiyevyy institut imeni V.G.Khlopina.

MAL'TSEV, G.Z.; MALININ, G.V.; MASHOVETS, V.P.

Structure of aluminate solutions. Zhur. struk. khim. 6 no.3:378-383 My-Je '65. (MIRA 18:8)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta i Radiyevyy institut imeni V.G.Khlopina, Leningrad.

KRUMGAL'Z, B.S.; MASHOVETS, V.P.

Aqueous solutions of LiOH at high temperatures. Zhur.neorg.khim. 10 no.11:2564-2565 N '65. (MIRA 18:12)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta. Submitted December 3, 1964.

MAL'TSEV, G.Z.; MASHOVETS, V.P.

Heat capacity of sodium aluminate [illegible] temperature range. Zhur. prikl. khim. [illegible].

1. Leningradskiy tekhnologicheskiy institut [illegible].

ACCESSION NR: AP5011818 UR/0080/65/038/004/0949/0952
541.123+546.46+546.41

AUTHOR: Mashovets, V. P.; Puchkov, L. V.

TITLE: Vapor pressure over liquid magnesium and calcium

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 4, 1965, 949-952

TOPIC TAGS: pressure measurement, calcium, magnesium

ABSTRACT: The saturation method was used to measure the vapor pressure of magnesium and calcium. In order to increase the B/K ratio where B and K are the mass transfer coefficients for vaporization and diffusion respectively, the gas carrier [illegible] purified argon was [illegible] equipment is described. The vapor pressure of Mg (99.9%) measured at 970-1220°K is described by the equation

$$\log P = 7.905 - \frac{6916}{T} \text{ (mm Hg)}$$

The heat of vaporization λ_{vap} was found to be 31.6 kcal/mol = $1.32 \cdot 10^5$ kj/mol. The

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ACCESSION NR: AP5011818

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[illegible] obtained for P and λ_{vap} are in [illegible] agreement with those of other authors. The vapor pressure of Ca (99.3%) measured at 1160-1300°K is described by the equation

$$\log P = 8.28 - \frac{8750}{T} \quad (\text{mm Hg}).$$

The heat of vaporization λ_{vap} was found to be 40.0 kcal/mol = $1.66 \cdot 10^5$ kj/mol. The [illegible] obtained agree with those of B. Tomlin (Proc. Phys. Soc., B 67, 767, 1954), [illegible] and [illegible]

[illegible] 30Jun64 [illegible] SUB CODE: ME , MM

NO REF SOV: 003 OTHER: 011

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MASHOVETS, V.P.; PODDYMOV, V.P.

Evaluation of certain thermodynamic functions of cadmium subhalides. Zhur. prikl. khim. 38 no.5:1137-1139 My '65. (MIRA 18:11)

MAKSIMOVA, I.; MASHOVETS, V.; YUSHKEVICH, V.

Conductance of sodium aluminate solutions at high temperatures.
Zhur.prikl.khim. 38 no.6:1400-1403 Je '65.
(MIRA 18:10)

MASHOVETS, V.P.; KRUMGAL'Z, B.S.; DIKROV, I.A.; MATVEYEVA, R.P.

Saturated vapor pressure of KOH solutions up to 400° and the activity of water in solutions of LiOH, NaOH, and KOH within a wide range of concentrations. Zhur. prikl. khim. 38 no. 10:2342-2344 O '65.

Density of aqueous KOH solutions at high temperatures within a wide range of concentrations. Ibid.:2344-2347

(MIRA 18:12)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta. Submitted July 22, 1964.

MASHOVETS, V.P.; DIBROV, I.A.; KRUMGAL'Z, B.S.

Some thermodynamic characteristics of alkaline solutions at high temperatures and pressures. Zhur.fiz.khim. 39 no.7:1771-1778 Jl '65. (MIRA 18:8)

1. Leningradskiy tekhnologicheskiy institut imeni Lensoveta.

MASHRAPOV, R.M.

Hydrometric study of rivers. Trudy TashGU no.185:63-68 '61.
(MIRA 14:12)
(Surkhan-Darya Province--Stream measurements)

MASHRAPOV, R.M.

What is known about the hydrometry of rivers? Trudy TashGU no.185 Geog. nauki no.21:63-68 '61. (MIRA 16:8)
(Surkhan-Darya Province--Rivers) (Hydrometer)

MASHRAPOV, [illegible].

Prospects for finding oil and gas in the Cretaceous and Jurassic sediments of southeastern Fergana. Uzb. geol. zhur. 9 no.3:58-62 '65. (MIRA 18:8)

1. Fergannefterazvedka.

MASHRAPOV, Z.M.

Prospecting for lithologic and stratigraphic screened oil pools in the region of Nursuk structures. Vop.geol.Uzb. no.2:171-177 '61. (MIRA 15:12)

(Nursuk region (Uzbekistan)—Petroleum geology)

MASHRAPOV, Z.M.

Oil and gas fields in Lower Cretaceous sediments of the Khodzhiabad deposit. Vop. geol. Uzb. no.3:106-113 '62. (MIRA 16:6)

(Uzbekistan—Petroleum geology)
(Uzbekistan—Gas, Natural—Geology)

DIKENSHTEYN, G.Kh.; KUTUZOVA, V.V.; MASHIYKOV, K.K.; BABAYEV, A.G.; POL'STER, L.A.; YUFEREV, R.F.; SHISHOVA, A.I.; BAREYEV, R.A.; MAKAROVA, L.N.; MURADOV, K.; PYANOVSKAYA, I.A.; SEMOV, V.N.; SIROTINA, Ye.A.; TURKINA, I.S.; FEL'DMAN, S.L.; KHON, A.V.; KUNITSKAYA, T.N.; GOLENKOVA, N.P.; ROSHINA, V.M.; FARTUKOV, M.M.; SHCHUTSKAYA, Ye.K.; ALTAYEVA, N.V.; BYKADOROV, V.A.; KOTOVA, M.S.; SMIRNOV, L.M.; IBRAGIMOV, M.S.; KRAVCHENKO, M.F.; MARKOVA, L.P.; ROZYYEVA, T.R.; UZAKOV, O.; SLAVIN, P.S.; NIKITINA, Ye.A.; MILOGRADOVA, M.V.; BARTASHEVICH, O.V.; STAROBINETS, I.S.; KARIMOV, A.K.

[Splicing of the wires of overhead power transmission lines] Soedinenie provodov vozdushnykh linii elektroperedachi. Moskva, Energiia, 1964. 69 p. (Biblioteka elektromontera, no.132) (MIRA 17:9)

AYZENBERG, Yu.B.; BUDNIKOV , P.P., redaktor; MASHRYKOV, K., otvetstvennyy redaktor; ZUBOVA, M.I., tekhnicheskiy redaktor

[Turkmenistan building materials; raw material sources and technological investigations] Stroitel'nye materialy Turkmenistana; syr'evye istochniki i tekhnologicheskaia izuchennost'. Pod obshchei red. P.P.Budnikova. Otv.red. K.Mashrykov. Ashkhabad, Izd-vo Akademii nauk Turkmenskoi SSR, 1951. 226 p. [Microfilm] (MLRA 10:3)

1. Chlen-korrespondent AN SSSR, deystvitel'nyy chlen AN USSR (for Ayzenberg)
(Turkmenistan--Building materials)

ALI-ZADE, A.; MASHRYKOV, K.; ESENOV, M.

Origin and conditions under which petroleum occurs. Izv.AN Turk.SSR no.2:43-52 '51. (MLRA 6:8)

1. Institut geologii Akademii nauk Turkmenskoy SSR.
(Soviet Central Asia--Petroleum--Geology) (Geology--Petroleum--Soviet Central Asia)

ALI-ZADE, A. A.; MASHRYKOV, K.

Geology, Structural - Balkhan Mountain Region

Diapyrism of folds in the Balkhan Mountain region. Izv. Turk. fil. AN [illegible] No. 3, 1951.

[redacted]

Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

MASHRYKOV, K.

History of the tectonic development of Tuar-Kyr. Izv.AN Turk.SSR no.2:21-27 '55. (MLRA 9:5)

1. Institut geologii AN Turkmenskoy SSR.
(Tuar-Kyr--Geology, Structural)

15-57-12-16787D

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 12, p 12 (USSR)

AUTHOR: Mashrykov, K.

TITLE: The Jurassic Coal-Bearing Deposits of Northwestern Turkmeniya and Their Position in the Crimean-Caucasian-Caspian Province (Yurskiye uglenosnyye otlozheniya severo-zapadnoy Turkmenii i ikh polozheniye v Krymo-Kavkazo-Prikaspiyskoy uglenosnoy provintsii) Author's abstract of his dissertation for the degree of Doctor of Geological and Mineralogical Sciences, presented to the In-t geol. AN TurkmSSR, MGU (Institute of Geology, AS Turkmenskaya SSR, Moscow State University), Ashkhabad, 1957

ABSTRACT: Field Observations over a period of several years have permitted conclusions to be drawn concerning the structure and coal potential of the Jurassic rocks of western Turkmeniya. Lithology, microfossils,

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The Jurassic Coal-Bearing Deposits (Cont.)

megafossils, and spore-pollen groups have been used to subdivide the Jurassic rocks of Tuar-Kyr and Bol'shoy Balkhan. Data on the structure and historical geology of the region are given by the author.

ASSOCIATION: In-t geol. AN TurkmSSR, MGU (Institute of Geology, AS Turkmenskaya SSR, Moscow State University)

Card 2/2

MASHRYKOV, K.K.; FOMENKO, K.Ye.

Recent data on the deep geological structure of southeastern Turkmenistan. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.6:46-53 '61. (MIRA 15:3)

1. Otdel razvedochnoy geofiziki i seysmologii AN Turkmenskoy SSR.

(Turkmenistan--Geology, Structural)

MASHRYKOV, K.K., akademik; SEMENOVICH, V.V., kand.geol.-mineral.nauk (Ashkhabad); SMIRNOV, L.N., kand.geol.-mineral.nauk (Ashkhabad)

Beneath the sand cover. Priroda 51 no.10:57-59 O '62. (MIRA 15:10)

1. AN Turkmenskoy SSR (for Mashrykov).
(Turkmenistan—Mines and mineral resources)

MASHRYKOV, K.; TSEPELEV, N.S.; KULIYEV, K.

Concretionary formations in coal measures of the Kugitang Jurassic deposits. Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.1: 66-71 '62. (MIRA 16:12)

1. Institut geologii AN Turkmenskoy SSR.

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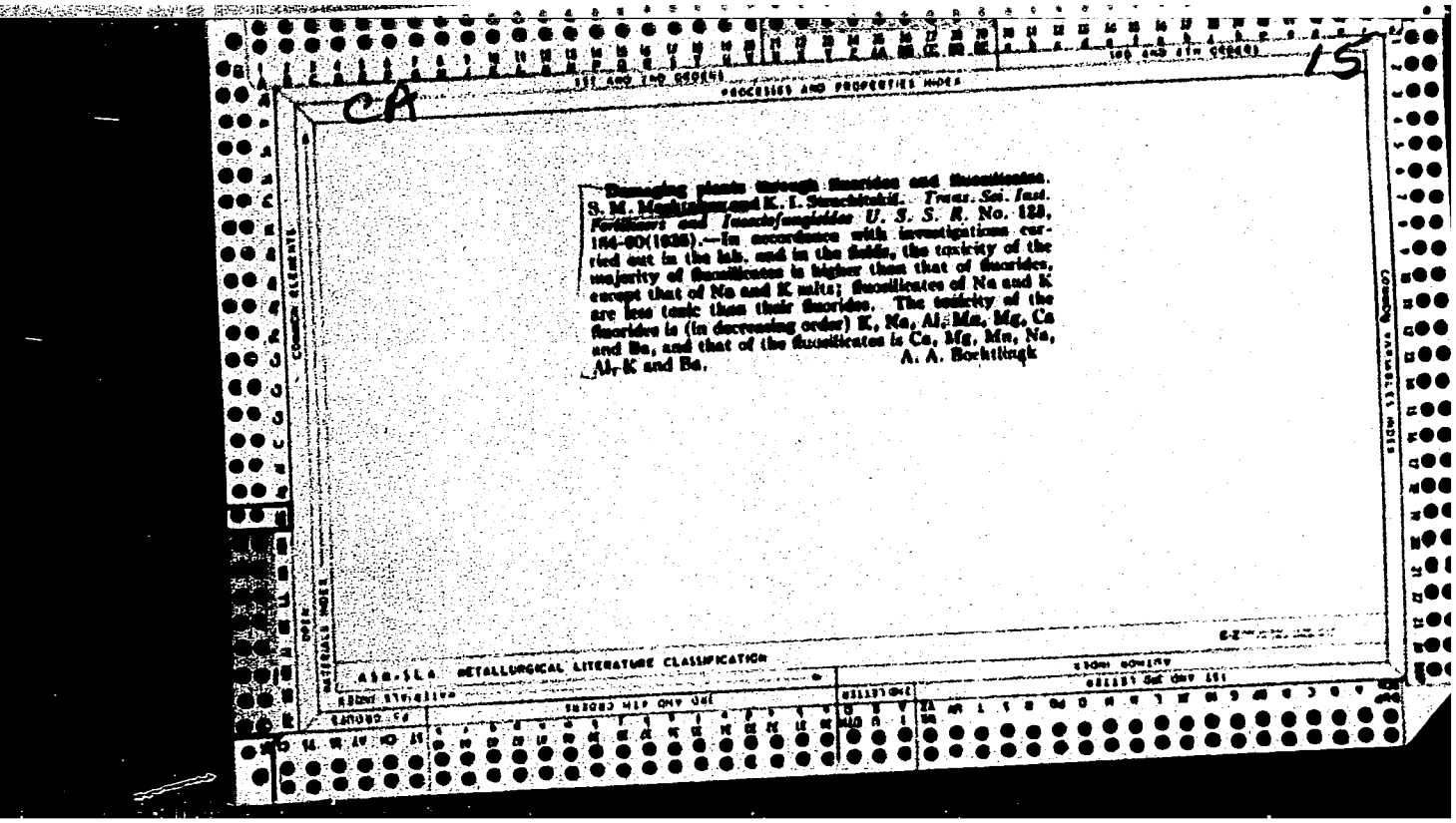

Damaging plants through fluorides and fluosilicates. S. M. Meglinskaya and K. I. Stanchinskii. *Trans. Sci. Inst. Fertilizers and Insectofungicides U. S. S. R.* No. 128, 164-90(1938).—In accordance with investigations carried out in the lab. and in the fields, the toxicity of the majority of fluosilicates is higher than that of fluorides, except that of Na and K salts; fluosilicates of Na and K are less toxic than their fluorides. The toxicity of the fluorides is (in decreasing order) K, Na, Al, Mn, Mg, Ca and Ba, and that of the fluosilicates is Ca, Mg, Mn, Na, Al, K and Ba. A. A. Berkhimgk

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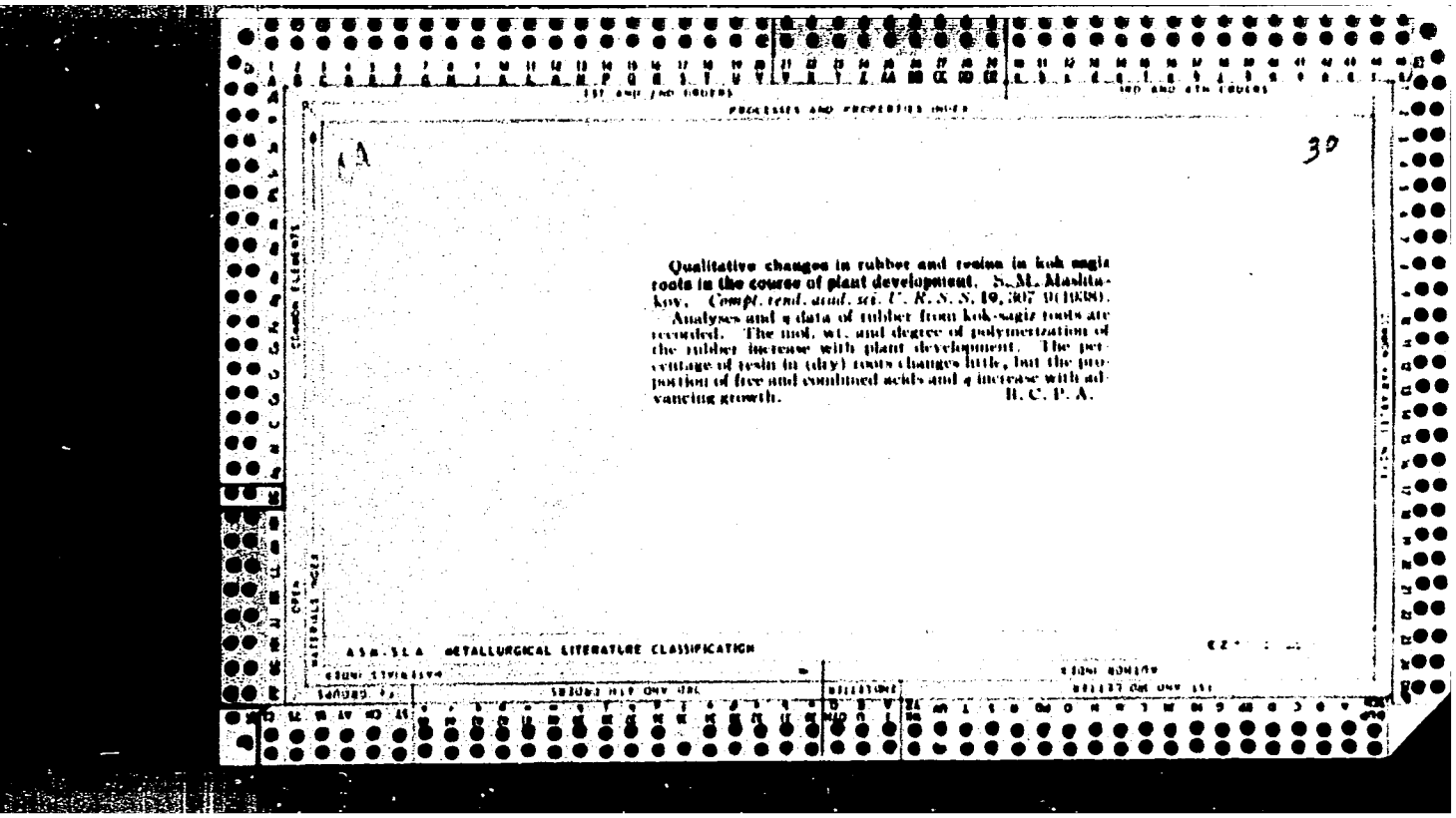

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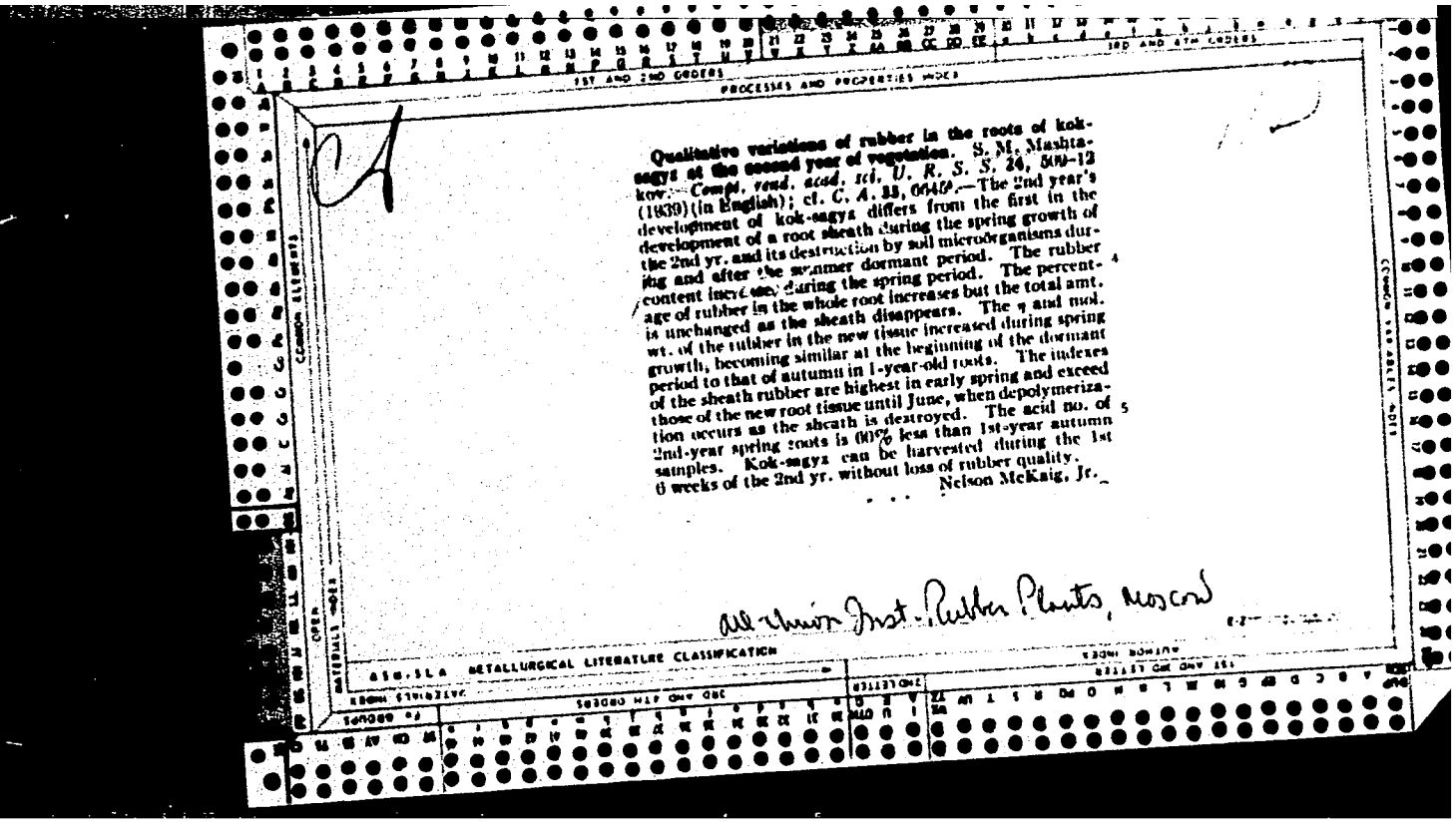
Qualitative changes in rubber and resins in kok-saghiz roots in the course of plant development. S. M. Alashitskov. *Compt. rend. acad. sci. U. R. S. S.* **19**, 307–9 (1938).

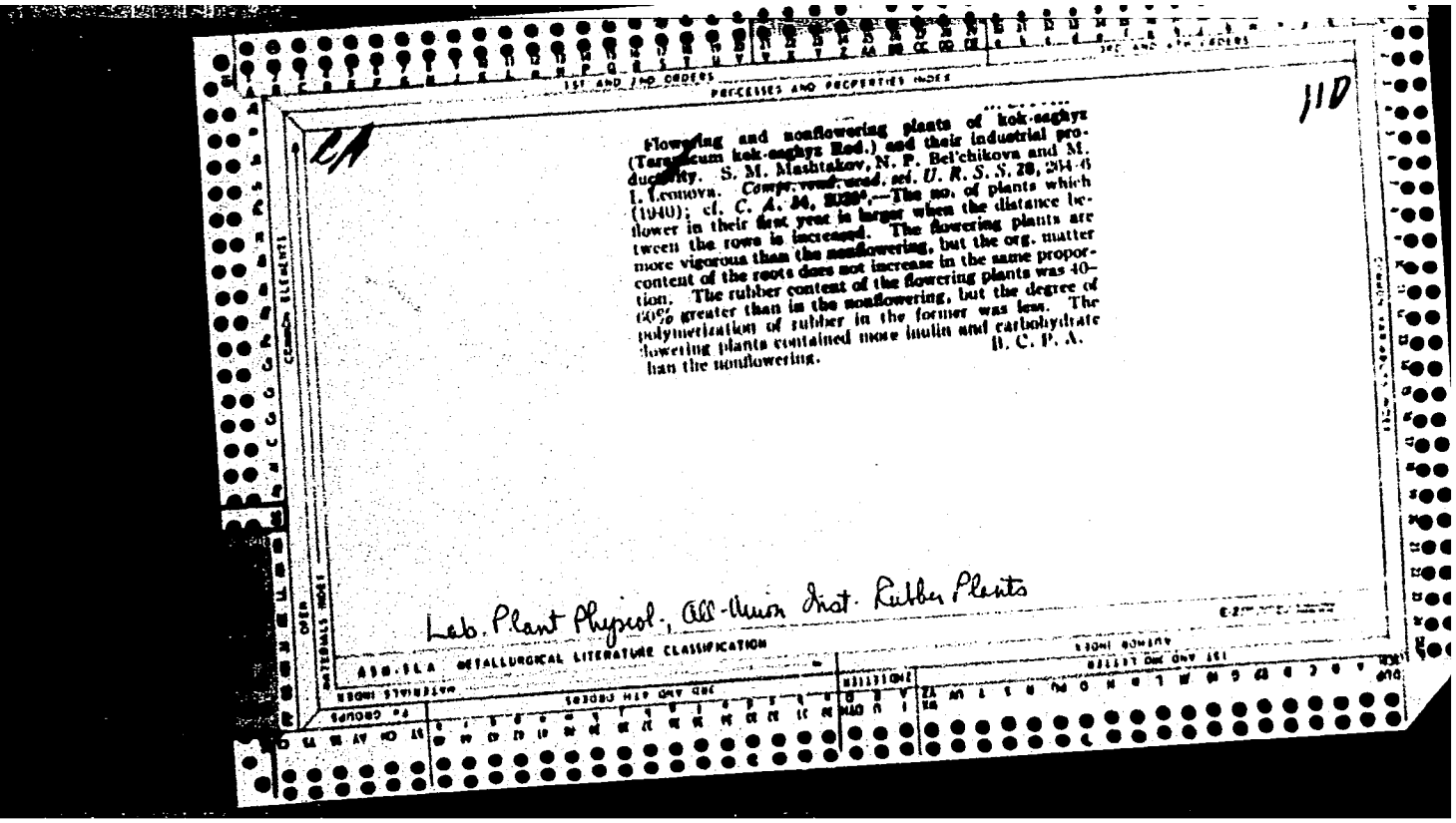
Analyses and q data of rubber from kok-saghiz roots are recorded. The mol. wt. and degree of polymerization of the rubber increase with plant development. The percentage of resin in (dry) roots changes little, but the proportion of free and combined acids and q increase with advancing growth. H. C. P. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Qualitative variations of rubber in the roots of kok-sagyz at the second year of vegetation. S. M. Mashtakov.—*Compt. rend. acad. sci. U. R. S. S.* 24, 809–13 (1939)(in English); cf. *C. A.* 33, 6648.—The 2nd year's development of kok-sagyz differs from the first in the development of a root sheath during the spring growth of the 2nd yr. and its destruction by soil microorganisms during and after the summer dormant period. The rubber content increases during the spring period. The percentage of rubber in the whole root increases but the total amt. is unchanged as the sheath disappears. The η and mol. wt. of the rubber in the new tissue increased during spring growth, becoming similar at the beginning of the dormant period to that of autumn in 1-year-old roots. The indexes of the sheath rubber are highest in early spring and exceed those of the new root tissue until June, when depolymerization occurs as the sheath is destroyed. The acid no. of 2nd-year spring roots is 60% less than 1st-year autumn samples. Kok-sagyz can be harvested during the 1st 6 weeks of the 2nd yr. without loss of rubber quality.
Nelson McKaig, Jr.

All-Union Inst. Rubber Plants, Moscow

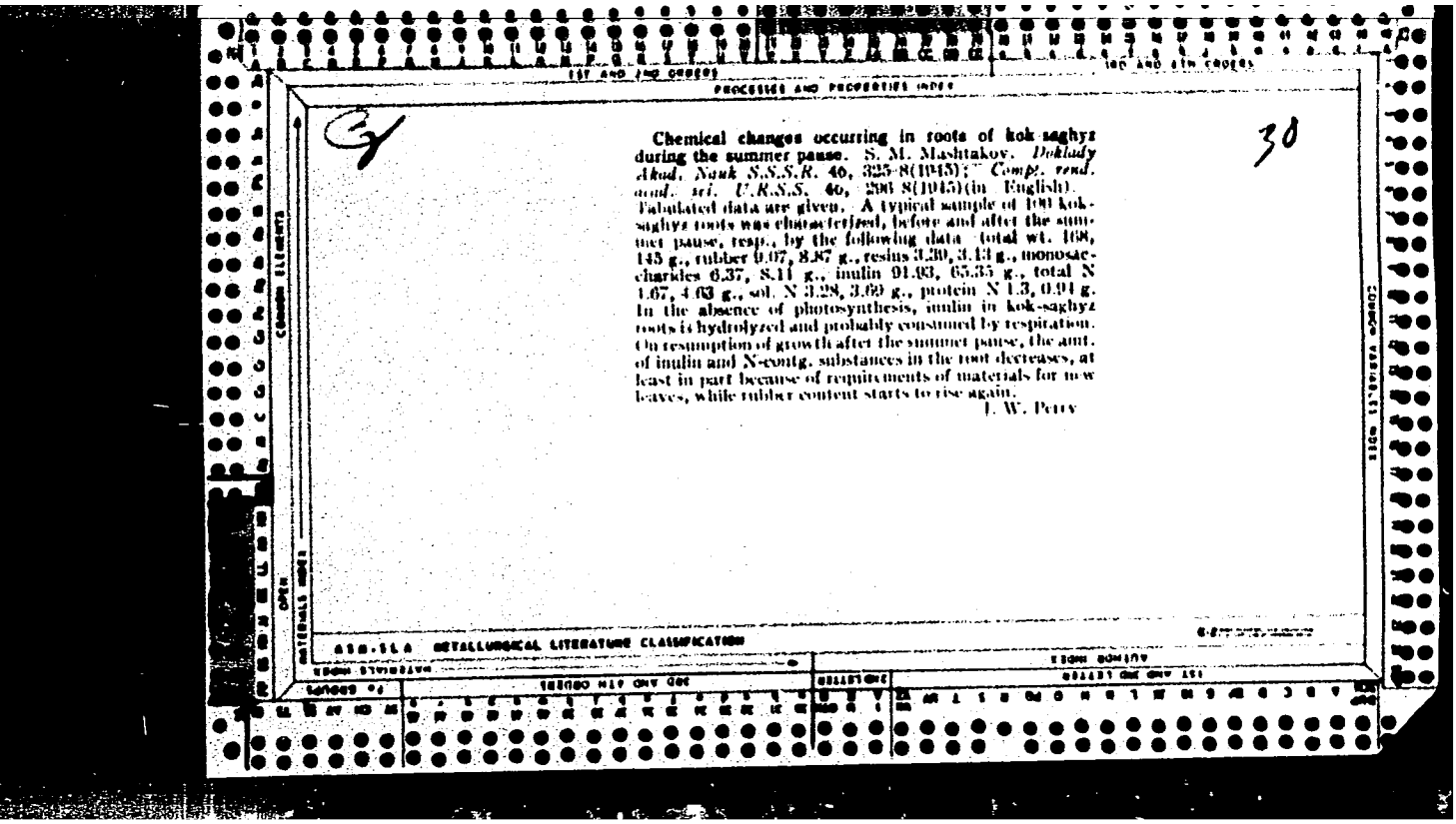


PROCESSES AND PROPERTIES INDEX

Flowering and nonflowering plants of kok-saghyz (Taraxacum kok-saghyz Rod.) and their industrial productivity. S. M. Mashtakov, N. P. Bel'chikova and M. I. Lemova. *Compt. rend. acad. sci. U. R. S. S.* 28, 204-6 (1940); cf. *C. A.* 34, 8220⁹.—The no. of plants which flower in their first year is larger when the distance between the rows is increased. The flowering plants are more vigorous than the nonflowering, but the org. matter content of the roots does not increase in the same proportion. The rubber content of the flowering plants was 40–60% greater than in the nonflowering, but the degree of polymerization of rubber in the former was less. The flowering plants contained more inulin and carbohydrate than the nonflowering. B. C. P. A.

Lab. Plant Physiol., All-Union Inst. Rubber Plants

ASB-ELA METALLURGICAL LITERATURE CLASSIFICATION



Chemical changes occurring in roots of kok-saghyz during the summer pause. S. M. Mashtakov. *Doklady Akad. Nauk S.S.S.R.* 46, 325-8(1945); *Compt. rend. acad. sci. U.R.S.S.* 46, 298-8(1945)(in English). Tabulated data are given. A typical sample of 100 kok-saghyz roots was characterized, before and after the summer pause, resp., by the following data: total wt. 168, 145 g., rubber 9.07, 8.87 g., resins 3.20, 3.13 g., monosaccharides 6.37, 8.11 g., inulin 91.83, 65.35 g., total N 1.67, 1.63 g., sol. N 3.28, 3.09 g., protein N 1.3, 0.91 g. In the absence of photosynthesis, inulin in kok-saghyz roots is hydrolyzed and probably consumed by respiration. On resumption of growth after the summer pause, the amt. of inulin and N-contg. substances in the root decreases, at least in part because of requirements of materials for new leaves, while rubber content starts to rise again.

J. W. Perry