

LIBMAN, N.M.; KUZNETSOV, S.G.

Synthesis of some substituted amino ketones having cholinergic properties. Zhur.ob.khim. 33 no.6:1991-1999 Je '63. (MIRA 16:7)
(Ketones) (Parasympathomimetic substances)

"APPROVED FOR RELEASE: 06/19/2000

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L 17963-65

ACCESSION NR: AP5002622

IOFFE, D.V., KUENETSOV, S.G.

Synthesis of hydroxy butylaminoethyl esters. Zhur. ob. khim. 34
no.12:3898-3900 D '64 (MIRA 18:1)

KUZNETSOV, S.G.; LIEMAN, N.M.

Synthesis of biologically active substituted acetylenic amines.
Zhur. org. khim. 1 no.8:1399-1406 Ag '65. (MIRA 18:11)

PETROV, A.S.; SOMIN, I.N.; KUZNETSOV, S.G.

Reaction of chloral hydrate and hydroxylamine with some substituted
anilines. Part 1. Zhur. org. khim. i no.8:1434-1437 Ag '65.
(MIRA 18:11)

1. Institut toksikologii Ministerstva zdravookhraneniya SSSR,
Leningrad.

SOMIN, I.N.; KUZNETSOV, S.G.

Oximes of α -dimethylaminoalkanes and their derivatives.
Zhur. org. khim. 1 no.11:1973-1976 N '65.

(MIRA 18:12)

1. Submitted November 12, 1964.

KUZNETSOV, S.G.; GOLIKOV, S.N.

Cholinolytic activity and some physicochemical properties
of alkylaminoethyl esters of benzoic acid. Farmakol. toksik.
26 no.3:275-279 My-Je'63 (MIRA 17:2)

KUZNETSOV, S.G.; KHOTYANOVSKAYA, Z.N.; KURNIKOVA, N.I.

α-Cycloalkyl-*α*-phenylpropionic acids and their aminoalkyl
esters. Zhur. ob. khim. 34 no. 5:1618-1621 My '64.
(MIRA 17:7)

Dissertation: "Perennial Lupine and Basic Methods for its Utilization."
All-Union Sci Res. Inst of Fertilizers, Agricultural Engineering and Soil
Science imeni K.K. Gedroyets, 25 Mar 47.

SO: Vechernyaya Moskva, Mav, 1947 (Project #17836)

KUZNETSOV, S. G.

Agricultural Extension Work

Basic tasks in the organization of collective farm Houses of Agricultural Cultural.
S. G. Kuznetsov. Sov. agron. 10, No. 7, 1952.

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

YEMEL'YANOV, V.I.; KUZNETSOV, S.G., kand.sel'skokhoz. nauk

Possibilities for developing agriculture on the "Sergievskii"
State Farm. Zemledelie 7 no.7:14-18 J1 '59. (MIRA 12:9)

1. Glavnyy agronom sovkhosa "Sergiyevskiy" (for Yemel'yanov).
(Moscow Province—State farms)

KUZNETSOV, S.G. uchenyy sekretar'

Work of the co-ordinated session of soil scientists. Zemledelie
23 no.5:88-90 My '61. (MIRA 14:4)

1. Otdeleniye zemledeliya Vsesoyuznoy akademii sel'skokhozyaystvennykh
nauk imeni Lenina.
(Soil research)

KUZNETSOV, S.G., kand.sel'skokhozyaystvennykh nauk

All-Union Conference of Scientists on Geographical Distribution
of Fertilizer Experiments. Zemledelie 23 no.9:80-82 S '61.

(MIRA14:12)

(Fertilizers and manures) S

KUZNETSOV, S., kand.sel'skokhoyaystvennykh nauk; MUROMTSEV, O., kand.biolog-
icheskiy nauk.

Gibberlin and possibilities for its usage. Zemledelie 23 no.23:91-92
Mr '61. (MIRA 14:3)

(Gibberellin)

KUZNETSOV, S. G.

Boron fertilizers for fields. Zemledelie 24 no.9:87-88 S '62.

1. Glavnyy agronom Upravleniya nauki, propagandy i peredovogo
opyta Ministerstva sel'skogo khozyaystva SSSR,

(Fertilizers and manures)
(Plants, Effect of boron on)

GOLIKOV, S.N.; KUZNETSOV, S.G.; IOFFE, D.V.

Transformation in the body of certain cholinolytic substances containing the tertiary amino group into quaternary ammonium compounds. Farm. i tekhn. 25 no.6:651-657 N-D '62.

(MIRA 17:8)

KUZNETSOV, S. I.

RT-1526 (Thermodynamic properties of hydrargillite and bemit) Termodinamicheskie
svoistva gidrargillita i bemit.

SO: Zhurnal Prikladnoi Khimii, 13^p(11): 1187-1190, 1950

CA KUZNETSOV, S. I.

2

Acceleration of the decomposition of aluminate solutions by means of small additions of aluminum salts. F. I. Vol'f, S. I. Kuznetsov, and O. V. Serebrennikova. *J. Applied Chem. U.S.S.R.* 23, 57-62 (1950) (Engl. translation); *Zhur. Priklad. Khim.* 23, 60-6 (1950).—Solid Al salts accelerate the dissolution of aluminate salts which are supersatd. with hydrargillite. Aq. solns. of Al salts do not display this accelerating effect. Z. D. Sheldon

KUZNETSOV, S.I.

Equilibrium constants in the reaction $\text{Al(OH)}_3 + \text{OH}^- \rightleftharpoons \text{Al(OH)}_4^-$. J.appl.
Chem. USSR '52, 25, 748-751. (MLRA 5:8)
(BA-BI Je '53:530)

Zhur. Prikl. Khim.,

Constants of the equilibrium reaction $\text{Al(OH)}_3 + \text{OH}^- \rightleftharpoons \text{Al(OH)}_4^-$
 S. I. Kuvshinov (S. M. Kirov Univ. Physico-
 che Inst.), *J. Appl. Chem. U.S.S.R.* 25, 827-30 (1952);
Zhur. Priklad. Khim. 25, 748-51 (1952). — $K_2 = (m_{\text{Al(OH)}_4^-} / m_{\text{Al(OH)}_3} \cdot m_{\text{OH}^-})$, where m = molality and γ =
 activity coeff. for the reaction Al(OH)_3 (hydrargillite) +
 $\text{OH}^- \rightleftharpoons \text{Al(OH)}_4^-$ is 0.0114, 0.043, 0.147, 0.23, 0.31, 0.51,
 0.53, and 0.54 at 25, 30, 45, 60, 80, 100, 120, and 140°.
 $\Delta F_{\text{Al(OH)}_4^-} = -342,500$ cal. at 25°. The exptl. method
 was analogous to that of Randall and Spencer (C.A. 22,
 3082).
 Don F. Cromer

KUZNETSOV, S. I.

PHASE I

TREASURE ISLAND BIBLIOGRAPHICAL REPORT

AID 428 - I

BOOK

Call No.: TN775.K87

Authors: KUZNETSOV, S. I. and EPSHTEIN, A. M.

Full Title: ELECTROLYTIC PRODUCTION OF ALUMINUM

Transliterated Title: Elektroliticheskoye proizvodstvo alyuminiya

Publishing Data

Originating Agency: None

Publishing House: State Scientific and Technical Publishing House
of Literature on Ferrous and Nonferrous Metallurgy

Date: 1953

No. pp.: 304

No. of copies: 4,000

Editorial Staff

Appraiser: Rempel', S. I., Kand. of Chem. Sci.

The authors acknowledge the valuable suggestions made by

Prof. A. Kh. Benuni and Eng. B. I. Itsikson.

Text Data

Coverage: This is a handbook for foremen of electrolytic shops of aluminum plants. It contains a brief historical sketch of the development of the Soviet aluminum industry, and descriptions of fundamental principles of electrolytic reduction of aluminum, methods of production of alumina, fluoride salts and carbon materials, mounting and dismantling of electrolytic baths, organization of work in electrolytic shops, etc. Examples of simple technological calculations are given in the Appendix.

1/3

Elektroliticheskoye proizvodstvo alyuminiya

AID 428 - I

The author mainly kept in mind the practical viewpoint, discussing the most expedient methods of start and operation of electrolytic baths, prevention and correction of defects, and increase in the efficiency of production. The book is meant for readers familiar with the fundamentals of physics, electrochemistry, and aluminum electrolytic shop practice.

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Ch. IV Design, Mounting and Dismounting of Modern Electrolytic Baths	106-137
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Ch. VI Initial and Subsequent Operations of Baths	145-166
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2/3

Elektroliticheskoye proizvodstvo alyuminiya

AID 428 - I

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Ch. X	Technical Control of Production	252-260
Ch. XI	Casting House of the Electrolytic Shop	261-272
Ch. XII	Electrolytic Refining of Aluminum	273-278
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Ch. XIV	Safety Engineering and Protection of Labor in Electrolytic Shops	283-286
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Appendix:	Fundamental Technological Calculations	293-297
	Example of Safety Rules for Electrolysis Operators	298-299
	Bibliography	300-301

Purpose: The authors aim to familiarize foremen of electrolytic shops with certain theoretical principles of electrometallurgy in order to facilitate and improve their work.

Facilities: None

No. of Russian and Slavic References: 40 (1937-1952)

Available: Library of Congress.

3/3

KOZNETSOV, S. J.

~~Equilibrium diagram of the system AlO₃-Na₂O-Fe₂O₃
F. L. Vol'pert & J. Kuznetsov, *J. Appl. Chem. U.S.S.R.*
26, 2659 (1953) (Russ. translation). See *Chem. Abstr.* 48, 6072d
H. L. H.~~

① A
for

KUZNETSOV, S. I.

Chemical Abstracts
May 25, 1954
General and Physical
Chemistry

(2)
Equilibrium diagram of the system $\text{Al}_2\text{O}_3\text{-Na}_2\text{O-H}_2\text{O}$.
F. P. Vol' and S. I. Kuznetsov. *Zhur. Priklad. Khim.* 26,
298-302(1953); cf. *Fricke and Lucatis, C.A.* 24, 5250-
Older data are reexamined in the light of more recent exptl.
facts. The compn. of the solid phase in equil. with solns.
represented by the right branch of the isotherms above 30°
are still unknown. Available data practically complete the
isotherm at 30° : the left branch (AB) is in equil. with
 $\text{Al}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ (I); the right branch is divided into (BC) in
equil. with $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2.5 \text{H}_2\text{O}$ (II) and (CD) in equil. with
 $3\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 6\text{H}_2\text{O}$ (III). The space of the rectangular co-
ordinate, giving the isotherm as a plot of Al_2O_3 vs. Na_2O , is
divided by lines drawn at 45° to the axes representing the
same (wt. %) H_2O content; and by lines from the origin
representing the same mole ratio $\text{Na}_2\text{O}/\text{Al}_2\text{O}_3$. From the 3
sections of the isotherm (AB), (BC), and (CD), as bases, tri-
angles are drawn with apexes at the corresponding solid
phase I, II, and III. Thus 8 fields are delineated represent-
ing areas of equil. with the 3 solid phases and pairs of I-II
and II-III.
I. Bencowitz

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KUZNETSOV, S. I.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Electrochemistry

Electrolytic oxidation of humic substances in alkali and soda solutions. G. B. Iapp and S. I. Kuznetsov (S. M. Kirov Ural Polytech. Inst.; *Zhur. Priklad. Khim.* 26, 1089-91(1953).—Electrolytic oxidation of humic matter which accumulated in alk. liquors of hydrometallurgical operations was studied with respect to optimum conditions. It was shown that the oxidation was more effective in soda solns.; current yields up to 81% were possible at 80° (lower temps. were less effective). In NaOH soln. yields of 7-8% were attainable. The current yield rose with concn. of humic matter; best anode c.d. was 0.5 amp./sq. dm.; at higher c.d. the yield dropped. Most effective oxidation occurred near the beginning of the process, after which the efficiency declined. Smooth metallic electrodes (Ni) were best. Disadvantages of the process were connected with foaming, which was most serious with high c.d.
G. M. Kosolapoff

AID P - 2287

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 13/21

Authors : ~~Kuznetsov, S. I., O. V. Serebrennikova, and~~
K. V. KAKOVSKAYA

Title : Interaction of bauxite and kaolin with calcium hydroxide

Periodical: Zhur. prikl. khim., 28, no.3, 317-319, 1955

Abstract : Preliminary calcination of bauxite and kaolin increases the yield of alumina. However, calcination and use of large quantities of $\text{Ca}(\text{OH})_2$ make the cost prohibitive for industrial use. Five references (1 Russian: 1936)

Institution: Ural Polytechnic Institute (im. S. M. Kirov)

Submitted : 0 12, 1953

AID P - 2288

Subject : USSR/Chemistry

Card 1/1 Pub: 152 - 14/21

Authors : Vol'f, F. F, O. F. Ryazantseva and S. I. Kuznetsov

Title : Effect of sodium sulfide on the decomposition
of aluminate solutions

Periodical: Zhur. prikl. khim., 28, no.3, 319-322, 1955

Abstract : Sodium sulfide contained in aluminate solutions decreases
their rate of decomposition. Two tables, no references.

Institution: Ural Polytechnic Institute (im. Kirov)

Submitted : D 9, 1953

KUZNETSOV, Sergey Ivanovich; POPEL', S.I., redaktor; LUCHKO, Yu.V., redaktor
izdatel'stva; KOVALENKO, N.I., tekhnicheskij redaktor

[Manufacture of alumina; problems in physical chemistry] Proizvodstvo
glinozema; voprosy fizicheskoi khimii. Sverdlovsk, Gos. nauchno-tekhn.
izd-vo lit-ry po chernoi i tsvetnoi metallurgii, Sverdlovskoe otd-nie,
1956. 115 p. (MLRA 9:12)
(Alumina)

KUZNETSOV, Sergey Ivanovich; GOLOSHCHAPOV, I.M., inzhener-polkovnik, redaktor;
ZUDINA, M.P., tekhnicheskiy redaktor

[Adjustment of cone bearings and gears in automobiles] Regulirovka
konicheskikh podshipnikov i subchatykh zatsplenii avtomobilei.
Moskva, Voen. izd-vo Ministerstva obor. SSSR, 1956. 117 p. (MLRA 10:1)
(Automobiles--Transmission devices)

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KUZNETSOV, S. I. Doc Tech Sci -- (diss) "^{Study}~~Analysis~~ of the *process* of decomposition ~~process~~ of aluminate solutions." Sverdlovsk, 1957. 18 pp 22 cm. (Min of Higher Education USSR. ~~USSR~~ Ural Polytechnical Inst im S.M. Kirov), 100 copies (KL, 21457, 101)

REMPER', S. I., KHODAK, L. P., and KUZNETSOV, S. I.

"The Effect of Periodic Charging of Raw Material on the Energy Regime of
and Electrolytic Bath. p. 144.

in book, Collection of Studies in the Metallurgy of Heavy Nonferrous Metals.
Sverdlovsk, 1957, 168pp. (Series: Its, Trudy, vyp. 1, Inst. metallurgii, Ural'skiy
filial, Sverdlovsk, Acad. Sci. USSR)

SOV/137-59-1-460

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 58 (USSR)

AUTHORS: Khodak, L. P., Rempel', S. I., Kuznetsov, S. I.

TITLE: On the Effect of Periodic Charging of Raw Materials on the Energy Balance in an Electrolytic Bath (O vliyanii periodicheskikh zagruzok syr'ya na energeticheskiy rezhim elektroliznoy vanny)

PERIODICAL: Tr. In-ta metallurgii. Ural'skiy fil. AN SSSR, 1957, Nr 1, pp 144-148

ABSTRACT: Utilizing the case of an Al bath as an example, the authors analyze the significance of the heat of dissolution of raw materials introduced into the bath in batches and the significance of an increase in electrical potential occurring in the bath during periods between charging on energy-balance equations for an electrolytic bath. In computing variations in heat content of a system undergoing an electrochemical reaction, e.g.: $Al_2O_3 + 1-1/2 C \rightarrow 2Al + 1-1/2 CO_2$, the right-hand side of the equation must show the Al_2O_3 in the form in which it is introduced into the bath rather than in the form of Al_2O_3 already dissolved in the electrolyte. In computing the energy balance, the alumina (A) must appear in the same form as that

Card 1/2

SOV/137-59-1-460

On the Effect of Periodic Charging of Raw Materials on the Energy Balance (cont.)

in which it appears in the material balance. An increase in the electrical potential of the bath, which occurs as the concentration of A in the electrolyte is reduced, results in the consumption of an additional quantity of electrical energy Q_g . If the increase in potential is brought about merely by a change in the concentration of A, then $Q_g = \Delta Z_p$, where ΔZ_p is the change in the isobaric-isothermal potential of the system. If other causes also are active, the magnitude of the ΔZ_p will be fully compensated by the electrical energy supplied externally. The magnitude of the Q_g will be the sum of two items: $Q_g = \Delta Z_p + Q'$, where Q' represents the additional quantity of electrical energy consumed in the bath as a result of an increase in the potential due to any causes aside from a change in the concentration of the A. Being a separate item on the input side of the energy-balance equation, the heat of dissolution of the raw material in the electrolyte must not be taken into consideration. A method permitting computation of the mean increase of potential in electrolyzers operating with raw material introduced periodically is given together with the computation of the mean value of the potential increase in an Al bath (this value being 0.105 v in said instance). In computing variations in the heat content of a system undergoing an electrochemical reaction the output side of the balance equation must be based on thermodynamic data for solid rather than dissolved A.

L. S.

Card 2/2

AUTHOR: Kuznetsov, S.I. and Vazhenin, S.F.

136-4-10/23

TITLE: Extraction of sulphur into the solution during the leaching of bauxites by Bayer's method. (Izvlachenie sery v rastvor pri vyshchelachivanii boksitov po sposobu Bayera.)

PERIODICAL: "Tsvetnye Metally" (Non-ferrous Metals) 1957, No.4, pp. 49 - 51 (U.S.S.R.)

ABSTRACT: The accumulation of sulphur in the aluminate solution in the leaching of bauxites leads to increased irreversible losses of alkali and can have a deleterious effect on the decomposition and other aspects of the process. In this article an account is given of the study of the kinetics of sulphur extraction into the solution during leaching of bauxite by Bayer's method and the influence on it of various factors. The leaching was carried out in 80 ml laboratory autoclaves, the aluminate solutions containing from 120-137 g/litre Al_2O_3 and from 326-335 g/litre of Na_2O_{total} . In all experiments the leaching was carried out on diasporic bauxites containing 50.0 - 55.3% Al_2O_3 and 0.25 - 1.9% S, the bauxites being ground to 75% through 270mesh. Lime was added to activate the leaching, and all experiments were carried out at 200 - 205 °C. The extraction of sulphur is plotted against the duration of

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Extraction of sulphur into the solution during the leaching
of bauxites by Bayer's method. (Cont.) 136-4-10/23

leaching for various conditions and against the silica content
in the bauxite. The experiments were carried out under
conditions rather similar to those prevailing in practice and
the results are considered to give a useful indication of the
influence of the sulphur content in the bauxite and in the
alumina solution taking part in the leaching on the degree of
extraction of sulphur. As regards the influence of silica it
is suggested that the sulphide sulphur extracted from the
bauxite reacts chemically with the silica to form compounds
only slightly soluble under the conditions of the leaching
process. There are 2 figures.
There are 3 references, all Slavic.

Card 2/2

ASSOCIATION: Ural Polytechnical Institute. (Uralskiy Politekhnich-
eskiy Institut).

AVAILABLE:

KUZNETSOV, S.I.
KOZHEVNIKOV, G.N.; KUZNETSOV, S.I.

Extracting alumina from slags containing helenite. Izv. vost. fil.
AN SSSR no.11:63-71 '57. (MIRA 11:1)

1 Ural'skiy filial Akademii nauk SSSR.
(Alumina) (Slag) (Bitumen)

KUZNETSOV, S.I.; SEREBRENNIKOVA, O.V.; KAKOVSKAYA, K.V.

Accelerating the decomposition of aluminate solutions by inoculating them with aluminum hydroxides and oxides. Zhur. prikl. khim. 30 no. 2: 195-200 J '57. (MLRA 10:5)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova.
(Aluminates)

KUZNETSOV, S.I.; VAZHENIN, S.F.

Effect of sulfur compounds on the dispersion formation of aluminum
hydroxide in the process of decomposition of aluminate solutions.
Zh. prikl.khim. 30 no.2:297-299 F '57. (MLRA 10:5)
(Aluminum hydroxide)

KUZNETSOV, S.I.

USSR/Physical Chemistry - Solutions, Theory of Acids and Bases.

B-11

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7290.

Author : S.I. Kuznetsov, L.N. Antipin, S.F. Vazhenin.

Inst :

Title : Character of Change in Some Properties of Aluminate Solutions in Decomposition Process.

Orig Pub: Zh. prikl. khimii, 1957, 30, No 3, 357-361.

Abstract: The character of changes in density, viscosity, specific electrical conductivity, surface tension and oversaturation degree of aluminate solutions at the decomposition process in various industrial regimes is shown. It is found that these properties change very little in the decomposition process. They may be assumed without any great error to be constant in the complete duration of the process with the exception of the initial period.

Card : 1/1

-5-

KUZNETSOV, S.I.

ZHUKOVSKIY, Ye.I., prof.; BELYAYEV, A.I., prof.; KUZNETSOV, S.I., dots.

Concerning the review of the book by V.A. Mazel' "Alumina production."
TSvet. met. 30 no.11:82 N '57. (MLRA 10:11)

1. Zaveduyushchiy kafedroy "Metallurgiya legkikh metallov" Severo-Kavkazskogo gorno-metallurgicheskogo instituta (for Zhukovskiy).
2. Zaveduyushchiy kafedroy "Metallurgiya legkikh metallov" Moskovskogo instituta tsvetnykh metallov i zolota im. M.I. Kalinina (for Belyayev).
3. Zaveduyushchiy kafedroy "Metallurgiya legkikh metallov" Ural'skogo politekhnicheskogo instituta im. S.M. Kirova (for Kuznetsov).
(Alumina) (Mazel', V.A.)

SOV/137-57-10-18787

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 10, p49 (USSR)

AUTHORS: ~~Kuznetsov~~, S.I., Antipin, L.N., Sryvalin, I.T., Serebrennikova, O.V., Derevyankin, V.A.

TITLE: Properties of Aluminate Solutions (Svoystva alyuminatnykh rastvorov)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 58, pp 36-50

ABSTRACT: A study is made of the properties of aluminate solutions for density, viscosity, electrical conductivity (C) and surface tension. Subjected to the investigation were solutions containing 30-320 g $\text{Na}_2\text{O}_{\text{total}}$ /liter and 15-320 g Al_2O_3 /liter, with a basicity of 1.48-3.53. The solutions are made by dissolution of grade A_{00} Al in chemically-pure caustic. These properties of the aluminate solutions are measured at 30, 40, 50, 60, and 80°C. Density is determined by pycnometer, viscosity by the Ostwald viscosimeter, and electrical conductivity by the Kohlrausch bridge. Surface tension is determined by the method of maximum pressure of air bubbles (the "Rebinder" instrument). An investigation of aluminate solutions of various molar $\text{Na}_2\text{O}_{\text{total}}$ Al_2O_3 ratios in accordance with strength show that

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SOV/137-57-10-18787

Properties of Aluminate Solutions

at first specific C rises with Na_2O concentration, attaining a maximum at 90-140 g $\text{Na}_2\text{O}_{\text{total}}$ /liter, and then declines. The molar C of aluminate solutions drops smoothly as concentration rises. Molar C decreases with increasing Al_2O_3 concentration in the solution. As temperature rises, the C maximum shifts toward higher concentrations. The viscosity of aluminate solutions containing up to 100 g $\text{Na}_2\text{O}_{\text{total}}$ /liter at various Al_2O_3 concentrations is virtually the same as the viscosity of NaOH solutions of the same strengths. The high values of the molar C of aluminate solutions and the low values of the energies of activation bear witness to the fact that the predominant Na^+ solutions in dilute solutions are also accompanied by a smaller amount of OH^- . Viscosity is determined primarily by the large and sluggish aluminate anions. As temperature rises, the density of the aluminate solutions shows a linear decrease. In dilute solutions, the energies of activation, ϵ_f and ϵ_η are 400-700 cal/mole, while in strong solutions they differ and depend upon the $\text{Na}_2\text{O}:\text{Al}_2\text{O}_3$ ratio. Surface tension rises with concentration and drops as temperature rises.

Card 2/2

O. B.

KUZNETSOV, S.I.; SRYVALIN, I.T.; ANTIPIN, L.N.; MIKHALEVA, A.M.

Influence of admixtures on the properties of aluminate solutions.
Trudy Ural. politekh.inst. no.58:51-56 '57. (MIRA 11:4)
(Alkali metal aluminates)

KUZNETSOV, S.I.; VAZHENIN, S.F.

Influence of sulfur compounds on the dispersive composition of aluminum hydroxide in the decomposition process of aluminate solution. Trudy Ural.politekh.inst. no.58:68-70 '57.

(MIRA 11:4)

(Alkali metal aluminates) (Sodium sulfate)

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M. KUZNETSOV, S.I.
KHODAK, L.P.; REMPEL, S.I.; KUZNETSOV, S.I.

Energy balance of aluminum bath. Trudy Ural.politekh.inst.
no.58:88-96 '57. (MIRA 11:4)
(Aluminum--Electrometallurgy)

Kuznetsov, S.I.

Academy of Sciences, Ural'skiy filial. Institut metallurgii
 Ural'skiy filial. Institut metallurgii, Ural Branch,
 Academy of Sciences, USSR; No. 3. Sverdlovsk, 1978. 157 p. Brevets
 also inserted. 1,000 copies printed.

Mitral'nyi Sverd: S.A. Vozol'skiy (Sverd. Sk.), Candidate of Technical Sciences;
 A.A. Kharinitskiy, Professor, Doctor; V.M. Miller, Professor; P.A. Pashchuk,
 Candidate of Technical Sciences; and S.I. Klugov, Candidate of Technical
 Sciences; Ed.: M.S. Murav'yev.

FOREWORD: This book is intended for ferrites and amorphous metalurgists.
 CONTENTS: The book presents results of investigations of theoretical pro-
 cesses in metallography and gives information on the efficient
 use of raw materials in ferrites and amorphous metalurgii and on the de-
 velopment of new production processes in the metallography and chemical
 industries. The articles were written by junior authors and experienced
 specialists of the scientific staff of the Institute of Metallurgy,
 Chemistry, and Electrochemistry, Ural Branch, Academy of Sciences, USSR,
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 of Toned Alloys of Cobalt 55

AUTHOR: Kuznetsov, S. I. SOV/163-58-1-9/53

TITLE: The Ultramicroscopic Investigation of Aluminate Solutions
(Ul'tramikroskopicheskoye issledovaniye alyuminatnykh
rastvorov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958,
Nr 1, pp 40-42 (USSR)

ABSTRACT: The structure of aluminate solutions was investigated by
means of the ultramicroscopic method. These investigations
showed that the aluminate solutions do not contain submicrons.
The behavior of the aluminate solutions in the decomposition
process was investigated by ultramicroscopic observations
according to the influence exerted by diverse additions, as
e.g. aluminum salts and colloidal aluminum hydroxide.
The heterogeneity of the solutions highly increases on the
addition of aluminum gel to the aluminate solutions. A high
concentration of submicrons occurs, which further agglomerate
into micro- and macro particles, as well as an intense de-
composition of the aluminate solution under the formation of
highly dispersed hydrargillite.
No increase of the heterogeneity occurs on an increase in

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SOV/163-58-1-9/53

The Ultramicroscopic Investigation of Aluminate Solutions

temperature of the initial solution to 60 - 80°C under the addition of aluminum gel.

New concepts of the structure of the aluminate solutions as well as new concepts of the growth of the hydrargillite crystals in the decomposition process of aluminate solutions were obtained by the ultramicroscopic investigations. There are 6 references, 3 of which are Soviet.

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

SUBMITTED: October 4, 1957

Card 2/2

AUTHOR: Kuznetsov, S.I. 136-58-3-11/21

TITLE: On A.N. Lyapunov's article "Critical notes on S.I. Kuznetsov's Articles" (O stat'ye A.N. Lyapunova "Kriticheskiye zamechaniya o stat'yakh S.I. Kuznetsova")

PERIODICAL: Tsvetnyye Metally, 1958. Nr.3. pp. 61 - 65 (USSR)

ABSTRACT: The author replies to Lyapunov's criticisms (Tsvetnyye Metally 1957 Nr.7) of points in two of his papers on reasons for the periodical size reduction of aluminium hydroxide in the decomposition of aluminate solutions. He presents results of additional experiments (in which V.A. Derevyankin participated) on the decomposition of a solution (132.5g total Na₂O and 125.2g Al₂O₃ per litre) with coarse-grained primer, the sizing of the product being tabulated. This showed that many new small crystals are produced, thus confirming his previous statements. He refers to electron-microscopic studies which showed the appearance and growth of dendrites at isolated points of the surface of hydrargillite crystals and deals with the heat effect of the hydrolytic decomposition of sodium aluminate. He agrees with Lyapunov that the heat effect on the surface of growing particles due to the heat of crystallization is small, but denies that this heat has no influence on the growth and relates this to the "wave" mechanism of crystallization established by O.M. Ansheles, V.B. Tatarskiy and A.A. Shteynberg (ref.12). He indicates an error in Lyapunov's treatment of the crystal-boundary temperature and defends his own recommendation that periodical size reduction can be minimised by lowering the

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On A.N. Lyapunov's Article "Critical Notes on S.I. Kuznetsov's Articles" 135-58-3-11/21

initial and final decomposition temperature. In support of his recommendation he cites experience at the Ural'skiy (fig.2) and Bogoslavskiy (fig.3) aluminium works. The latter contradicts Lyapunov's attribution of size changes to temperature changes. There are 4 figures, 1 table and 12 references, 8 of which are Slavic.

ASSOCIATION: Ural'skiy Politekhnikheskiy Institut (Ural'skiy Polytechnical Institute)
AVAILABLE: Library of Congress.

1. Aluminates-Decomposition-Analysis

Card 2/2

KOZHEVNIKOV, G.N.; KUZNETSOV, S.I.

Most satisfactory conditions for the leaching of soda-gehlenite
sinter. Trudy Inst. met. UFAN SSSR no.4:71-75 '58.
(MIRA 12:10)

(Gehlenite) (Leaching)

18(4)

AUTHORS:

~~Kuznetsov, S.I.~~, Derevyankin, V.A.,
Shabalina, O.K.

SOV/163-58-4-15/47

TITLE:

Investigation of the Recrystallization Process of Gibbsite Into Bemite (Issledovaniye protsessa perekristallizatsii gidrargillita v bemit)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 4, pp 87 - 93 (USSR)

ABSTRACT:

At temperatures of over 120° , gibbsite, if observed in an aqueous or basic medium, becomes unstable and changes into "bemite" (Refs 1,2). Up to now, this process has not yet been fully investigated. In the present instance the course of recrystallization of gibbsite into "bemite" (Bohemian ruby?) was investigated by means of X-ray analysis and electronic microscopy. A description is given of the experimental method. The recrystallization in question took place at 210° in water or alternatively in aluminate solutions of different concentrations, saturated or unsaturated with respect to "bemite". Electron-microscopic investigations offered the possibility of following the changes occurring in the surface particles of hydroxide during the recrystallization process of gibbsite into

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Investigation of the Recrystallization Process
of Gibbsite Into Bemite

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"bemite" under various conditions. At the same time, the re-crystallization tests in aluminate solutions gave clear evidence of one of the causes of the reduction of the size of the crystals. With an increase of the temperature of the aluminate solution up to 80 - 90° the gibbsite crystals split up into smaller particles causing fragments to be scattered in all directions. Thus, aluminate solutions effect the splitting-up of gibbsite crystals and this is to be regarded as the first cause of the comminution of hydroxide during the recrystallization process. There are 4 figures and 5 references, 4 of which are Soviet.

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

SUBMITTED: March 15, 1958

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18(4)

SOV/163-59-1-10/50

AUTHORS: Derevyankin, V. A., Kuznetsov, S. I., Shabalina, O. K.

TITLE: Investigation of the Aluminum Hydroxide Forming in the Spontaneous Decomposition of Aluminate Solutions (Issledovaniye gidrooksi alyuminiya, obrazuyushcheyasya pri samoprcizvol'nom razlozhenii alyuminatnykh rastvorov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 42-47 (USSR)

ABSTRACT: The method used in this investigation is described first. The aluminate solution was obtained by dissolving A00 aluminum in a chemically pure caustic soda solution. The solutions thus obtained contained 25 - 264 g/l Na_2O and were practically free from sodium carbonate. The molar ratio $\text{Na}_2\text{O}:\text{Al}_2\text{O}_3$ in the solutions was 1.193 and 1.70. Observations with the electron microscope in combination with an X-ray structural analysis provided the information for the determination of the phase composition, the shape and the nature of the surface of aluminum hydroxide crystals formed during the spontaneous decomposition of aluminate solutions. The most

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Investigation of the Aluminum Hydroxide Forming in the Spontaneous Decomposition of Aluminate Solutions

interesting conclusions drawn in this paper are as follows:

1) The newly precipitated aluminum hydroxide forming in the spontaneous decomposition of aluminate solutions of different concentration, is a hydrargillite. If the aluminum hydroxide is kept in the parent solutions for some time, bayerite is found in the precipitation product of this hydroxide. 2) The crystals of newly precipitated aluminum hydroxide exhibit a surface still in a state of development. The surface is in direct contact with the parent solution. In the course of time their habit turns into that of hydrargillite crystals. In highly concentrated solution they develop a pronounced bayerite habit. 3) If the crystals are kept in the parent solutions it is found that tentacles are formed on the surface of the hydroxide particles, which take the shape of thin triangular or rhombic platelets. There are 3 figures, 1 table, and 3 references, 1 of which is Soviet.

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

SUBMITTED: March 29, 1958

Card 2/2

KHODAK, L.P.; KUZNETSOV, S.I.; IVANOV, A.I.; SEMEBRENNIKOVA, O.V.;
MOLEVA, N.G.

Obtaining alumina from blast furnace slags rich in the compound.
Izv.Sib.otd.AN SSSR no.2:19-28 '59. (MIRA 12:7)
(Alumina) (Slag)

KUZNETSOV, S.I.; DEREVYANKIN, V.A.

On the ability of coarse-grained aluminum hydroxide to induce nucleation in decomposition of aluminate solutions. Croat chem acta 31 no.4:141-148 '59.
(EAI 9:9)

1. Urals Polytechnical Institute, Sverdlovsk, U.S.S.R.
(Crystals) (Aluminum hydroxide)
(Aluminates)

KUZNETSOV, S.I.; DEREVIANKIN, V.A.; SHABALINA, O.K.

Decomposition of aluminate solutions under the effect of additions
of aluminum salts and oxalic acid. Izv. vys. ucheb. zav.; tsvet.
met. 3 no.4:65-68 '60. (MIRA 13:9)

1. Ural'skiy politekhnicheskiy institut. Kafedra metallurgii legkikh
metallov.

(Aluminates)

(Chemistry, Metallurgic)

5.4120, 5.4130

77626
SOV/80-33-2-1/52

AUTHORS: Kuznetsov, S. I., Derevyankin, V. A., Shabalina. O, K.

TITLE: The Effect of Boemite and Diaspore Addition on the Rate of Decomposition of Aluminate Solutions

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 2, pp 257-266 (USSR)

ABSTRACT: This is the first article of a series devoted to study of different aluminum hydroxides and oxides on the rate of decomposition of aluminate solutions. Decomposition of the aluminate solutions with seed crystals of boemite and diaspore was studied in this article. The starting aluminate solutions were prepared from "pure" brand aluminum and chemically pure NaOH. The amount of Al_2O_3 in these solutions was 120-135 g/liter and that of Na_2O_{gen} , 122.5-144 g/liter; Na_2O_{kst} , 121-131 g/liter.

Note: Na_2O_{gen} is the amount of Na_2O in the solution in the form of alkali, aluminate, and soda; Na_2O_{kst}

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The Effect of Boemite and Diaspore Addition on 77626
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is the amount of Na_2O in a form of alkali and aluminate. The molar ratio, Cl_{gen} , of $\text{Na}_2\text{O}_{\text{gen}}$ to Al_2O_3 is 1.63-1.735 and that of $\text{Na}_2\text{O}_{\text{kst}}$ to Al_2O_3 , Cl_{kst} is 1.60-1.73. The amount of organic substances in the starting aluminate solutions varied from 0 to 2%. The following seed crystals were used: boemite obtained by roasting hydrargillite at 300° for 3 hours, henceforth called thermal boemite; boemite obtained by hydrothermal recrystallization of hydrargillite at 300° for 8 hours; diaspore synthesized by A. Laubengayer and R. Weisz method (J. Am. Chem. Soc., 65, 247 (1943)); and product of incomplete hydrothermal recrystallization of boemite into diaspore, containing 75% diaspore and 25% boemite. The size of the seed crystals varied from -40 to $+100 \mu$. The decomposition temperature ranged from 56° at start down to 30° after 72 hours in all cases. The seeding activity of the thermal boemite is shown in Fig. 1.

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The Effect of Boemite and Diaspore Addition on the Rate of Decomposition of Aluminate Solutions 77626
SOV/80-33-2-1/52

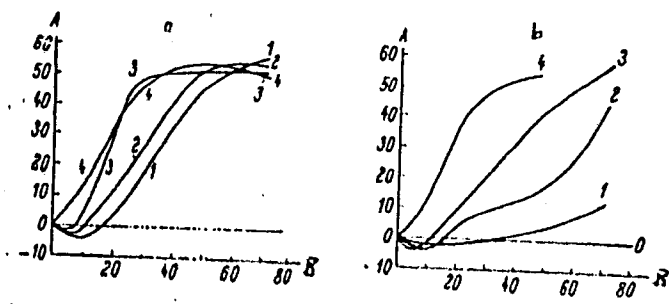


Fig. 1. Decomposition kinetics of the aluminate solution with different amounts of thermal boemite: a - without organic admixtures; b - with organic admixtures, 0.96% O₂ based on Na₂O gen.; A - degree of the solution decomposition (in %); B - duration of the decomposition (hours). The seeding ratio: 1 - 0.05; 2 - 0.1; 3 - 0.2; 4 - 0.5.

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Note: The seeding ratio is the ratio of Al_2O_3 in seed crystal to Al_2O_3 in solution. The seeding activity of the hydrothermal boemite is shown in Fig. 2.

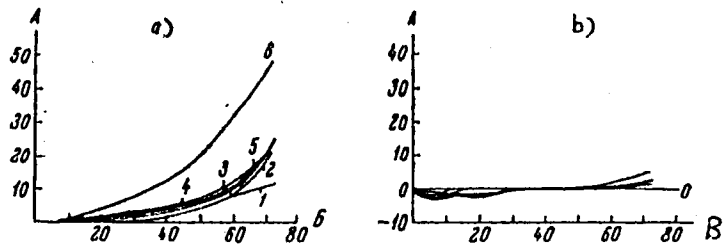


Fig. 2

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See caption on Card 5/9

The Effect of Boemite and Diaspore Addition on 77626
the Rate of Decomposition of Aluminate Solutions SOV/80-33-2-1/52

Caption to Fig. 2:

Fig. 2. Decomposition kinetics of the aluminate solution with different amount of hydrothermal boemite; a - without organic admixtures; b - with organic admixtures, 0.25% O_2 based on Na_2O_{gen} ; A - degree of solution decomposition (in %); B - duration of the decomposition (hours). The seeding ratio: 1 - 0.02; 2 - 0.05; 3 - 0.07; 4 - 0.1; 5 - 0.2; 6 - 0.5. The seeding ratio in Fig. 2b is between 0.02 and 0.5.

The seeding activity activity of the product of incomplete recrystallization of boemite into diaspore is shown in Fig. 3.

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The Effect of Boemite and Diaspore Addition on
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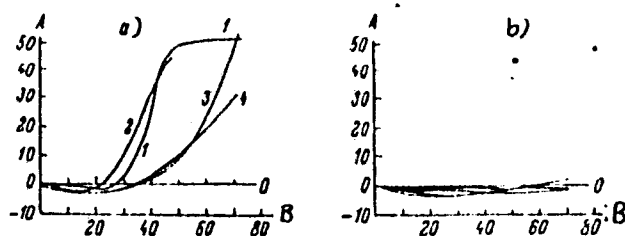


Fig. 3

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The Effect of Boemite and Diaspore Addition on the Rate of Decomposition of Aluminate Solutions 77626
SOV/80-33-2-1/52

Fig. 3. Decomposition kinetics of aluminate solution with different amounts of seed crystals from incomplete recrystallization product of boemite into diaspore: a - without organic admixtures; b - with organic admixtures, 1% based on Na_2O gen; A - degree of the solution decomposition (in %); B - duration of the decomposition (hours). The seeding ratio: 1 - 0.05; 2 - 0.1; 3 - 0.2; 4 - 0.5. The seeding ratio in Fig. 3b is in the range 0.05-0.5.

Decomposition of the aluminate solutions containing seed crystals of thermal boemite results in precipitation of the comparatively large hydroxide crystals, most of which are $+50-100 \mu$. A very fine precipitate of the hydroxide crystals -40μ up to

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46-55% was observed when seed crystals of the hydrothermal boemite were used. The solution in this case did not contained any organic admixtures. The small amount of seed crystals (the seeding ratio 0.05-0.1) facilitates the precipitation of fine crystals. Analysis of the hydroxide crystals indicated that they are composed of hydrargillite and seed crystals and the percent of the hydrargillite is higher than could be expected from decomposition of the solution. It means that part of the seed crystals undergo transformation into hydrargillite. X-ray phase analysis of the precipitates obtained during the decomposition of aluminate solution containing seed crystals of hydrothermal boemite showed that they also contain bayerite, i. e., that hydrothermal boemite on mixing with aluminate solutuion is transformed first into bayerite and then into hydrargillite. The high seeding activity of the product of incomplete recrystalliza-

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tion of boemite into diaspore, compared to hydrothermal boemite, is due to the partially distorted crystalline lattice of unrecrystallized boemite, the outer layer of which is transformed at first into bayerite and then into hydrargillite. The induction periods (as it is shown on the decomposition kinetics curves) is due to the recrystallization of the outer layer of boemite into hydrargillite. Microphotographs of the formed crystals taken with an electron microscope are given. It was concluded that diaspore is inactive as a seeding agent for the decomposition of the aluminate solutions. There are 9 figures; and 6 references, 2 Soviet, 3 German, and 1 U.S. The U.S. reference is: Laubengayer, A., Weisz, R., J. Am. Chem. Soc., 65, 247 (1943).

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

SUBMITTED: April 11, 1959

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5.4220

78206
SOV/80-33-3-7/47

AUTHORS: Kuznetsov, S. I., Derevyankin, V. A., Shabalina, O. K.

TITLE: The Effect of Added γ -Alumina and Corundum on the Rate of Decomposition of Aluminate Solutions

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 3, pp 547-552 (USSR)

ABSTRACT: This is a continuation of studies (Abstract 77626) on the rate of decomposition of aluminate solutions under the influence of added aluminum-oxide grains. This time, the authors used γ -alumina and corundum seeds, and the transitional products between the two, to accelerate aluminate decomposition by growing crystals. The three types of seeds were produced on annealing hydrargillite at 800° C for 4 hr, diaspore at 1,200° C for 5 hr, and hydrargillite at 1,100° C for 12 hr, respectively. Figures 1 and 2 illustrate the seeds of γ -alumina and its transitional products to corundum

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The Effect of Added γ -Alumina and
Corundum on the Rate of Decomposition
of Aluminate Solutions

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effectively accelerate the decomposition of dissolved sodium aluminate after a certain period of induction, while corundum does not affect the aluminate decomposition during any duration. The induction period decreases with the increasing quantity of the seeds relative to that of the aluminate solution, i.e., with the seeding ratio. Organic impurities first reduce the decomposing power of γ -alumina, but later increase it considerably. The decomposition of aluminates by γ -alumina gives rise to the precipitation of extremely fine aluminum hydroxide. Up to 30% of the grains remain smaller than 40 . . . Small amounts of organic impurities increase this fraction up to even 70%. However, the higher contents of organic substances make the hydroxide slightly coarser. Larger quantities of seeds (seeding ratios 0.2-0.5) also reduce the grain size of the hydroxide. The precipitate, generated by the transitional products from γ -alumina to corundum, consists of up to 25% of the fraction under 40 . . . ,

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The Effect of Added γ -Alumina and
Corundum on the Rate of Decomposition
of Aluminate Solutions

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in which the majority of grains vary from 2-5 μ across. X-ray diffraction data proved that all the precipitates consist of hydrargillite and the surface layers of the seeds themselves also turn into hydrargillite during the initial period of induction. Perhaps γ -alumina first turns into boehmite, then into bayerite found in the X-ray diffraction photographs, then into hydrargillite. Electron microscopic data disclosed the composition of γ -alumina of amorphous minute particles, whose porous aggregates have large surfaces per minute volume. During the induction period they become covered with dendritic crystals of boehmite and hydrargillite, 0.1-0.5 μ long and 0.1 μ across, whose crushing off at stirring of the solution produces numerous new crystallization centers. Some of the fine grains of γ -alumina recrystallize into hydrargillite completely and form pseudo-hexagonal platelets. In conclusion, the authors state that the seeding capacity of boehmite and γ -alumina is related to their instability in the presence of hydrargillite.

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The Effect of Added γ -Alumina and
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During the induction period, their surface layers turn into hydrargillite. Diaspore is also unstable but because of the very low rate of its recrystallization into hydrargillite, does not cause decomposition of aluminate solutions. The same reason is likely to be true for corundum. There are 8 figures; 1 table; and 1 Soviet reference.

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

SUBMITTED: April 11, 1959

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78206 SOV/80-33-3-7/47

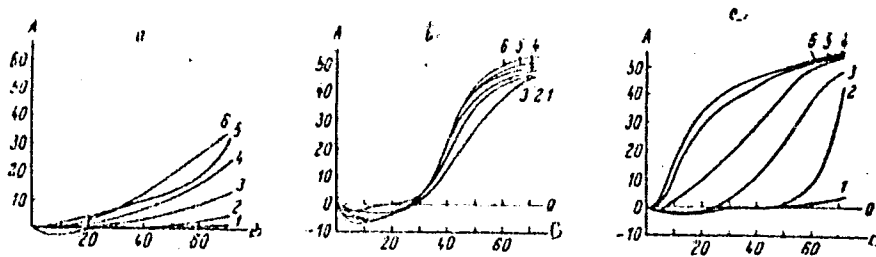


Fig. 1. Decomposition kinetics of aluminate solutions containing different quantities of γ -alumina seeds. (a) Without organic impurities; (b) with 1% O_2 of organic impurities considering total Na_2O 100%; (c) with 2% O_2 of organic impurities; (A) degree of solution decomposition (%); (B) duration of the decomposition (hr). Seeding ratio: 1-0.01; 2-0.05; 3-0.07; 4-0.1; 5-0.2; 6-0.5.

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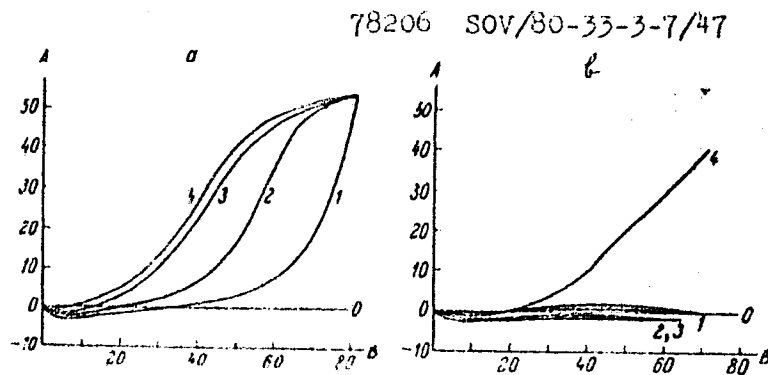


Fig. 2. Decomposition kinetics of aluminate solutions containing different quantities of the seeds produced by an incomplete recrystallization of γ -alumina into corundum. (a) Without organic impurities; (b) 1% O_2 of organic impurities considering total Na_2O 100%; (A) degree of the solution decomposition (%); (B) duration of the decomposition (hr). Seeding ratio: 1-0.05; 2-0.1; 3-0.2; 4-0.5.

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S/080/60/033/012/018/024
D209/D305

AUTHORS: Shabalina, O.K., Derevyankin, V. and Kuznetsov, S.I.

TITLE: Experimental investigation of aluminum and hydroxides and oxides by means of the electron microscope

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 12, 1960,
2774 - 2777

TEXT: The electron microscope is being increasingly used as a means of assessing the properties of aluminum hydroxide and oxides, so the authors studied various aspects of the preparation of samples for this purpose. Somewhat modified versions of the standard procedure were tested to try and surmount certain difficulties: The presence of soluble alkali impurities; the existence of readily-hydrolyzable substances, such as the titanium compounds noted by M.V. Mironov et al (Ref. 2: Izv. Vuzov, Tsvet. met, 1, 83, 1959); and the occurrence of large crystals with dimensions of 10 μ and more. Benzene appears to be the best liquid for preparing sus-

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D209/D305

Experimental investigation of ...

pensions; ethyl alcohol is unsuitable in view of the damage incurred by the collodion backing on desiccation. Carbon can also be employed as a film-backing in addition to collodion. It is made by evaporating a polystyrene - benzene solution on glass, after which the residue is dusted with carbon. The softened polystyrene is then dissolved in ethyl bromide, and the residual carbon-film is again washed in benzene and dried on the carrier-glass. Collodion and carbon film-backings react differently to concentrated NaOH and aluminate solutions: with NaOH the former material is loosened and fractured and evaporation of the solution, whereas the carbon backing is not affected in this way. A dense, ragged, coagulated layer obscuring all details is also formed when an aluminate solution is evaporated on the collodion film-backing. Investigation of crystals contaminated by alkali discloses the presence of halos or branching folds of alkaline film around them which distorts the true surface picture and gives rise to the illusion of numerous offshoots near diaspore crystals. But previous work by S.I. Kuznetsov et al (Ref. 4: Metallurgiya NDVSh, 4, 87, 1958; Kohaszati La-

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pok, 14, 7, 29, 1959) and V.A. Derevyankin et al (Ref. 5: NDVSh, Metallurgiya, 1, 42, 1959; Tr. Ural'skogo politekh. inst. im. S.M. Kirova, 98, 106, 1960) has shown that diasporite, unlike bismite and gibbsite, does not form dendrites. If these alkali-containing crystals are applied to carbon film-backing, however, they preserve their clear outlines since alkali will not deliquesce on it. As regards the question of large crystals, the very rigidity of the carbon film impedes the application of the technique used by the authors for turning crystals in order to appraise their three-dimensional form; the film fractures and turns with the crystals. This does not happen with collodion backings, and the authors have been able to employ such a method in much of their research. In view of this fact, and taking into account the need for rapidity and simplicity when preparing large numbers of samples for electron-microscope analysis, the standard procedure involving the use of collodion film-backing is recommended, although the expediency of utilizing the other modifications is also noted by the authors. There are 3 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication.

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Experimental investigation of ...

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reads as follows: D.E. Bradley, J. Appl. Phys., 27, 12, 1399, 1956. ✓

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M. Kirova
(Ural Polytechnic Institute im. S.M. Kirov)

SUBMITTED: March 9, 1960

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KUZYECOV, Sz.I. [Kuznetsov, S.I.], egyetemi tanar; SZEREBRENYIKOVA, O.V.
[Serebrenikova, O.V.], tanarseged; KAKOVSKIJ, I.A. [Kakovskiy, I.A.]
egyetemi tanar; ZAMBO, Janos, okleveles vegyeszmernok [translator]

Application of flocculents in the alumina industry. Koh lap 93
no.6:241-244 Ja '60.

1. Urali Muaszaki Egyetem, Szverdlovsk, SzSzsZR.

KUZNETSOV, S.I.; DEREVYANKIN, V.A.

Capability of coarse crystal aluminum hydroxide to induct
nucleation in the decomposition process of aluminate solutions.
Trudy Ural.politekh. inst. no.98:90-98 '60. (MIRA 14:3)
(Aluminum crystals--Growth)

DEREVYANKIN, V.A.; KUZNETSOV, S.I.

Organic substances in bauxites. Trudy Ural. politekh. inst. no.98:
99-105 '60. (MIRA 14:3)

(Bauxite--Analysis)

DEREVYANKIN, V.A.; KUZNETSOV, S.I.; SHABALINA, O.K.

Investigating the processes of dissolving and crystal growth
of aluminum hydroxide in alkaline aluminate solutions. Trydy
Ural.politekh. inst. no. 98:106-115 '60. (MIRA 14:3)
(Aluminum crystals--Growth)
(Electron microscopy)

KOZHEVNIKOV, G.N.; KUZNETSOV, S.I.

Kinetics of the interaction of helenite with soda. *Izv.Sib.otsd.*
AN SSSR no.8:127-130 '61. (MIRA 14:8)

1. Ural'skiy filial AN SSSR, Sverdlovsk.
(Slag) (Sodium carbonates)

DEREVYANKIN, V.A.; KUZNETSOV, S.I.

Mechanism of the growth of aluminum hydroxide crystals in the
decomposition process of aluminate solutions. TSvet. met. 34
no.5:46-47 My '61. (MIRA 14:5)

1. Ural'skiy politekhnicheskiy institut.
(Aluminum crystals---Growth)

18.3100 A also 1087

S/080/61/034/007/006/016
D223/D305

AUTHORS: Derevyankin, V.A., Kuznetsov, S.I., and Shabalina, O.K.

TITLE: Effect of additions of titanium oxide and silica on the leaching rate of aluminum hydroxide

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 7, 1961, 1456 - 1461

TEXT: The main part of this article deals with the study of kinetics and the nature of dissolving pure aluminum hydroxide in the presence of titanium and silicon oxides. To establish the nature of dissolving the crystals of hydroxide use was made of electron microscopy, by which means data was obtained on the formation of protective surface films on hydroxide crystals and also on the form of traces of chemical compounds, developed by the reaction of Ti and Si oxide with an alkaline solution of aluminum during leaching. The composition of these compounds were not studied. For leaching experiments following aluminum hydroxides were used: 1)

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Hydrargilite, obtained under control conditions; 2) Bemite, prepared by the recrystallization hydroargilite under hydro-thermal conditions at 300°C and for 8 hours; 3) Diaspor, prepared by the method of A.W. Laubengayer and R.S. Weisz (Ref. 6: J. Am. Chem. Soc. 65, 247, 1943), i.e. by heating bemite in presence of water at temperature 350-375°C with 2 % of diaspor seed. The results of the experiments confirmed that titanium oxide appreciably lowers the leaching rate of diaspor and bemite, but has no effect on the dissolving rate of hydroargalate. It was also confirmed that titanium oxide inhibition at a temperature of 150°C and higher prevents the leaching of bemite and diaspor; but on reaching 230°C it no longer prevents the leaching rate of bemite while the solution of diaspor is still inhibited. In this respect, TiO₂ gel and rutile differ, the latter being less active. In the presence of waste (3-4 % of the initial weight of solid phase), the inhibiting action of titanium oxide is much smaller and at temperatures above 175° becomes practically zero. The oxides of silicon also deter the leaching of aluminum hydroxide, but to a lesser extent than ti-

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tanium oxide. The best inhibitors are silica gel and opal. Electron microscopy has confirmed N.K. Druzhinina's suggestion on the mechanism of the inhibitive action of titanium oxides, i.e. the formation of protective films on aluminum hydroxide. The thickness of film is appreciably less than 100 Å and on the addition of waste films were not formed. With an increase in leaching time, the protective films crystallize into needle-shaped crystals which still form protective layers, but now these are porous and alkalies diffuse to aluminum hydroxide and the dissolving rate is higher. Additions of silicon oxides form crystalline protecting films of sodium aluminum silicates on aluminum hydroxide insulating it from alkaline attack. The formation of aluminum silicates on the surface of aluminum hydroxide crystals can be explained in the following manner: Silicon compounds contained in bauxite react with alkaline aluminum solution to form sodium silicate which in turn, reacts with sodium aluminate to form a complex compound $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$. The form of reaction, state the authors, is probably:

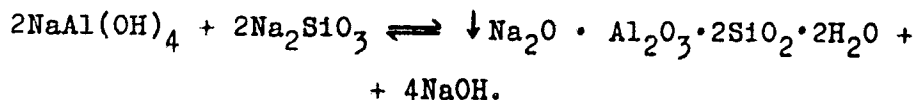
X

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The equilibrium of the above reaction is displaced to the right since sodium aluminum silicate is fairly insoluble in aluminum solutions especially of low or medium concentrations. The best condition for above reaction to take place is at the surface of bauxite particles. There are 4 figures and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: A.W. Laubengayer, and R.S. Weisz, J. Am. Chem. Soc., 65, 247, 1943.

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

SUBMITTED: August 2, 1960

Card 4/4

KUZNETSOV, S.I.; SEREBRENNIKOVA, O.V.; KOZHEVNIKOV, G.N.

Effect of cation exchangers on the stability of aluminate solutions.
Zhur.prikl.khim. 34 no.10:2342-2345 0 '61. (MIRA 14:11)
(Aluminates) (Ion exchange)

KUZNETSOV, S.I.; SEREBRENNIKOV, O.V.; DEREVIANKIN, V.A.; VOLKOVA, P.I.;
PAVLOV, F.N.; YEVTYUTOV, A.A.; CHEMODANOV, V.S.; STOLYAR, B.A.;
KONOVALOV, I.V.; LIVER, V.B.; MIYCHENKO, V.S.; SMIRNOV, B.A.

"Production of alumina" by A.I. Lainer. Reviewed by S.I.
Kuznetsov and others. TSvet. met. 34 no.11:85-86 N '61.
(MIRA 14:11)

1. Ural'skiy politekhnicheskiy institut (for Kuznetsov,
Serebrennikov, Derevyankin). 2. Ural'skiy filial AN SSSR
(for Volkova, Pavlov). 3. Ural'skiy alyuminiyevyy zavod (for
Yevtyutov, Chemodanov, Stolyar). 4. Bogoslovskiy alyuminiyevyy
zavod (for Konovalov, Liver, Miychenko). 5. Sverdlovskiy
Sovnarkhoz (for Smirnov).

(Alumina)
(Lainer, A.I.)

KUZNETSOV, S.I.; DEREVIANKIN, V.A.; SHKLYAR, R.Sh.

Problem of "trisodium hydroaluminate." Zhur.prikl.khim. 35
no.12:2588-2591 D '62. (MIRA 16:5)
(Sodium aluminates)