S/262/62/000/009/014/017
I007/1207

AUTHOR: Firsanova, E. N.

TITLE: Present-day quality requirements for motor lube-oils

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 42. Silovyye ustanovki, no. 9, 1962, 58, abstract, 42.9.336. In collection "Prisadki k. maslam i toplivam". M., Gostoptekhizdat, 1961, 5-11

TEXT: The characteristics of the following Soviet and foreign lube oils are given: Дп-8 (Dp-8), ПКЗп-10 (PKZp-10), АКЗп-6 (AKZp-6), ДСп-8 (DSp-8), technical oil of type 50, sulfur-containing oil, SAE-10W, (10W/20, 10W/30SW), SAE-5 W/20 (5W/30), etc. Results of testing various oil grades on the УИМ-НАТИ (UIM-NATI) test stand are reported and methods of estimating oil quality by laboratory and motor tests, are described. According to data obtained at Tsentralnyy ordena Trudovogo Krasnogo Znameni nauchno-issledovatel'skiy avtomobilniy i avtomotornyy institut (Central "Order of the Red Banner of Labor" Scientific Research Institute of Automobiles and Automobile Engines) and the Vsesoyuznyy nauchno-issledovatel'skiy institut po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo Topliva (All-Union Scientific Research Institute for Oil and Gas Refining and the Production of Synthetic Liquid Fuel) all lube oils used in automobile engines under moderate working conditions, give a marked settling deposit in the ДК-2 (DK-2) apparatus after 50 hours of heating at 200°C. There are 4 figures, 4 tables and 5 references.

[Abstracter's note: Complete translation.]

Card 1/1

FIRSANOVA, G.N.

Geography of mosses in Khimiki District, Moscow Province. Biul. MOIP.Otd.geol. 34 no.4:171 Jl-Ag '59. (MIRA 13:8)
(Khimki District--Mosses)

FIRSANOVA, G.N.

Mosses of Khimki District, Moscow Province. Uch. zap. MOPI 79: 19-57 '60. (MIRA 14:9)

(Khimki District--Mosses)

FIRSANOV, L. A. (Engr.)

The direct obtaining of beryllium-copper and beryllium-aluminum alloys by the heat-treatment reduction of beryllium chloride, Metallurgy of Non-Ferrous Metals, Moscow, 1946. Collection of Scientific Works No. 14, Moscow Inst. of Non-Ferrous Metallurgy.
Report U-3391, 22 April 1953.

FIRSANOVA, L. A.

PHASE I TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 436 - I

BOOK Call No.: TN775.B337

Authors: BELYAYEV, A. I., RAPOPORT, M. B. and FIRSANOVA, L. A.

Full Title: ELECTROMETALLURGY OF ALUMINUM

Transliterated Title: Elektrometallurgiya 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.: 720 No. of copies: 4,500

Editorial Staff

Reviewers: Garbarchuk, G. I., Winner of Stalin Prize and Sushkov, A.I., Engineer

The authors express their thanks to Prof. Dr. V. A. Pazukhin. Prof. E. I. Zhukovskiy. Eng. A. I. Sushkov, Eng. G. I. Garbarchuk. Eng. B. I. Itsykson and P. K. Kovshikov.

Text Data

Coverage: This is a fundamental study of the modern development of aluminum alloy electrometallurgy. It gives a detailed analysis of the theory and practice of the electrolytic production of cryolite aluminum alloys, the electrolytic refining of aluminum and the production of aluminum-silicon alloys in electric furnaces. Design of

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Moscow Inst. of Non ferrous Metals and Gold im. M.I. Kalinin

Elektrometallurgiya alyuminiya

AID 436 -I

reduction plants and calculation of aluminum baths and electric furnaces for melting aluminum-silicon alloys are briefly discussed. The theoretical part is based mainly on Soviet sources which, in the authors' opinion, by far excel in scope and scientific value the non-Russian literature on the electrometallurgy of aluminum. The practical conclusions are drawn from the achievements of the aluminum industry in the USSR, according to the authors' note in the preface. In the text, however, no reference is made to any installation in operation now in the Soviet Union.

The authors have collected in a single volume a large amount of information from the very extensive and extremely scattered references on the subject treated. The book is written in an easy, comprehensive language, is provided with numerous illustrations and diagrams, and gives a good picture of the methods used in electrolytic production of aluminum in the Soviet Union at the present time.

TABLE OF CONTENTS

Elektrometallurgiya alyuminiya

AID 436 - I

Elektrometallurgiya alyuminiya

AID 436 -I

Elektrometallurgiya alyuminiya

Purpose: The book is intended to provide information on the subject treated for engineers, technicians and scientific workers of the aluminum industry as well as students of advanced courses in the electrometallurgy of aluminum.
Facilities: None
No. of Russian and Slavic References: Numerous Russian references in footnotes.
Available: Library of Congress.

10/10

Elektrometallurgiya alyuminiya

AGEYEV, P.Ya.; ALABYSHEV, A.F.; BAYMAKOV, Yu.V.; BELYAYEV, A.I.; BATASHEV, K.P.; BUGAREV, L.A.; VASIL'YEV, Z.V.; GUPALO, I.P.; GUS'KOV, V.M.; ZHURIN, A.I.; VETYUKOV, M.M.; KOSTYUKOV, A.A.; LOZHKIN, L.N.; OL'KHOV, N.P.; OSIPOVA, T.V.; PERTSEV, I.I.; RUMYANTSEV, M.V.; STRELETS, Ye.L.; FIRSANOVA, L.A.; CHUPRAKOV, V.Ya.

Georgii Alekseevich Abramov. TSvet.met. 27 no.2:72-73 Mr-Ap '54. (MIRA 10:10)
(Abramov, Georgii Alekseevich, 1906-1953)

BELYAYEV, A.I.; FIKSANOVA, L.A.; ZHEMCHUZHINA, Ye.A.

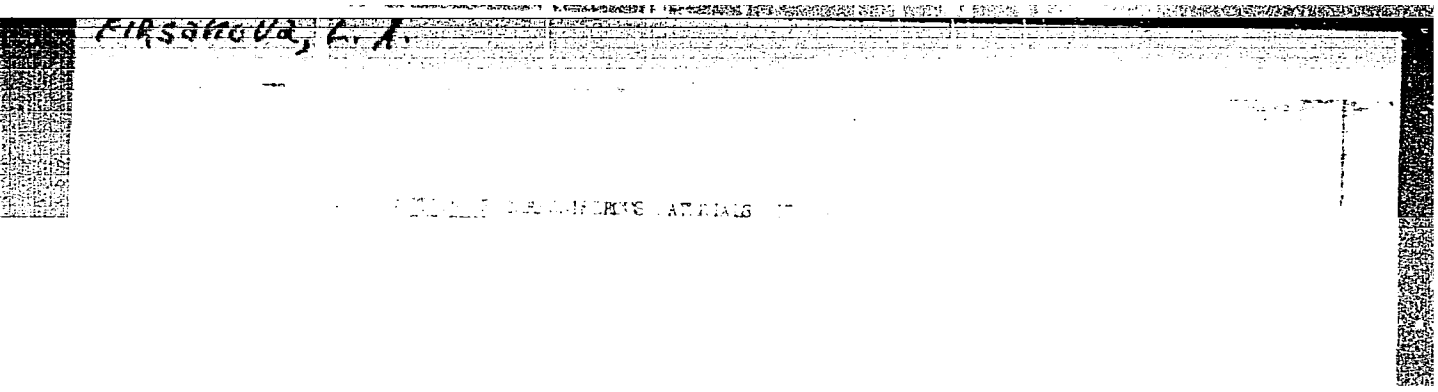
Unsuppressed anode effects. TSvet.met.27 no.3:35-41 My-Je '54.
(MIRA 10:10)

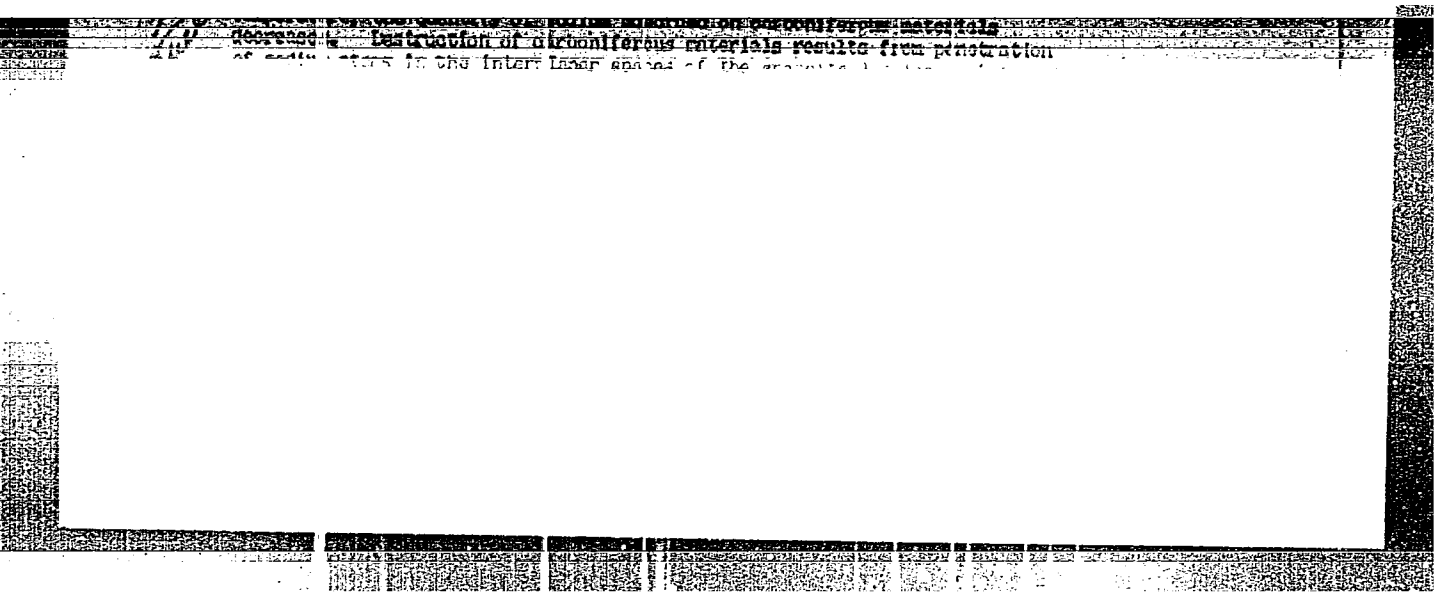
1. Mintsvetmetzoloto.
(Aluminum--Electrometallurgy)

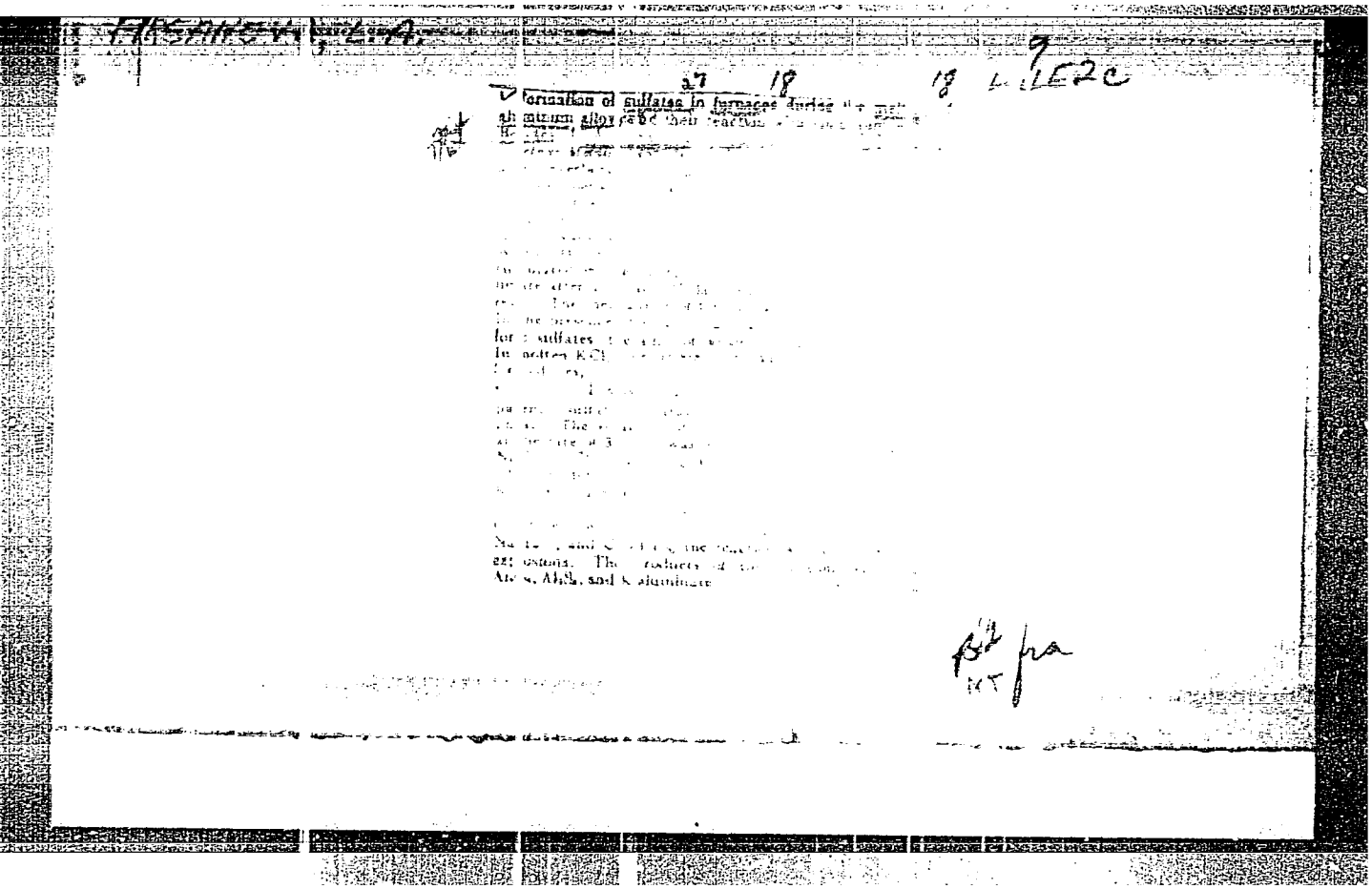
FIRSANOVA, L.A.

BELYAYEV, A.I.; RAPPOPORT, M.B.; FIRSANOVA, L.A.

Causes for the destruction of carbon cathode blocks in starting aluminum cells. TSvet.met. 27 no.6:44-46 N-D '54. (MIRA 10:10)
(Cathodes) (Aluminum--Electrometallurgy)







BELYAYEV, Anatoliy Ivanovich; ZHEMCHUZHINA, Yelena Aleksandrovna; FIRSANOVA, Lidiya Aleksandrovna; SKLYARENKO, S.I., professor, doktor, retsenzent; KRESTOVNIKOV, A.N., professor, doktor, retsenzent; CHERNOV, A.N., redaktor; ARKHANGEL'SKAYA, M.S., redaktor izdatel'stva; ATTOPOVICH, M.K., tekhnicheskiy redaktor

[Physical chemistry of soluble salts] Fizicheskaia khimiia rasplavlennykh solei. Moskva, Gos. nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 359 p. (MIRA 10:11)
(Salts, Soluble)

137-58-4-6569

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 36 (USSR)

AUTHORS: Belyayev, A.I., Zhemchuzhina, Ye.A., Firsanova, L.A.

TITLE: An Investigation of the Physical Chemical Properties of Aluminum Bath Electrolyte Containing Magnesium Fluoride (Issledovaniye fiziko-khimicheskikh svoystv elektrolita alyuminiyevykh vann, soderzhashchego ftoristyy magniy)

PERIODICAL: Sb. nauchn tr. Mosk. in-t tsvetn-met. i zolota i VNITO tsvetn. metallurgii, 1957, Nr 26, pp 143-161

ABSTRACT: MgF depresses the temperature of onset of crystallization of $NaF+AlF_3$ melts more than does CaF_2. The rate of solution of Al_2O_3 in melts containing MgF_2 is higher than that of melts containing CaF_2. MgF_2 increases the wetting angle of coal by $NaF+AlF_3$ melts more than does CaF_2. The critical D of melts of $NaF+AlF_3$ with added MgF_2 is greater than the critical D of the same melts containing CaF. Losses of Al in melts of $NaF+AlF_3$ with added MgF_2 are smaller than the losses of Al in melts with added CaF_2. When direct current is superimposed, the losses depend upon the D_k, while when

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137-58-4-6569

An Investigation of the Physical (cont.)

D > 0.2 amps/cm^2, Al losses diminish. Liberation of Na at the cathode is diminished somewhat by adding either CaF_2 or MgF_2. The density of $NaF+AlF_3$ melts increases under the effect of MgF_2 to a lesser degree than under the effect of CaF_2. The electric conductivity of $NaF+AlF_3$ melts diminishes under the effect of addition of 5% CaF_2+5% MgF_2 a little more than under the effect of addition of 7% CaF_2. On the whole, MgF_2 exercises a more favorable effect on the physical chemical properties of the electrolyte in Al baths than does CaF_2, and it is therefore desirable to use MgF_2 as a component of the electrolyte.

I.G.

1. Aluminum coatings 2. Electrolytes--Properties--Analysis

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SOV/137-58-7-14644

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 100 (USSR)

AUTHORS: Belyayev, A.I., Firsanova, L.A.

TITLE: Melting Al-Si Alloys from Secondary Aluminum Treatment Slimes (Vyplavka splavov Al-Si iz shlamov ot pererabotki vtorichnogo alyuminiya)

PERIODICAL: Sb. nauchn. tr. Mosk. in-t tsvetn. met. i zolota i VNITO tsvetn. metallurgii, 1957, Nr 26, pp 162-171

ABSTRACT: A description is offered of the results of laboratory and larger-scale experiments in the melting of slimes and the distillation of Al from the alloys obtained. The possibility is established of obtaining Al-Si alloys containing 50-60% Al in reduction melts. These melts, enriched by filtration under pressure, can be used to distill pure Al via an Al subchloride in a vacuum distillation furnace using graphite heaters.

L.P.

1. Aluminum-silicon alloys--Production

Card 1/1

FIRSANOVA, L. A.

137-1958-2-2593

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 55 (USSR)

AUTHORS: Firsanova, L. A., Belyayev, A. I.

TITLE: Obtaining Pure Beryllium Chloride by Chlorinating Beryl (Polucheniye chistogo khlorida berilliya khlorirovaniyem berilla)

PERIODICAL: Sb. nauchn. tr. Mosk. in-t tsvetn. met. i zolota i VNITO tsvetn. metallurgii, 1957, Nr 26, pp 184-192

ABSTRACT: Laboratory tests were made to ascertain the feasibility of chlorinating beryl with Cl_2 and recovering pure $BeCl_2$ from a mixture of Be, Al, Fe, and Si chlorides by vacuum distillation and re-distillation. The possibility is shown of a direct chlorination of beryl with Cl_2 in the presence of carbonaceous substances at 1200-1300°, with a resulting mixture of chlorides. Conditions of fractional distillation and vacuum re-distillation were studied in detail. The beryl used was composed of 11.5 percent BeO, 18.0 percent Al_2O_3, 60.0 percent SiO_2, 4.1 percent Fe_2O_3. Before vacuum distillation the $BeCl_2$ contained 0.6 percent $FeCl_3$ and 1.59 percent $AlCl_3$. Vacuum-distilled it contained 0.12 percent $FeCl_3$ and 0.086 percent $AlCl_3$. G. S.

Card 1/1

1. Beryllium chloride--Production--Theory

AUTHOR: Belyaev, A.I., Zhemchuzhina, E.A. and Firsanova, L.A.

TITLE: Tests of magnesium fluoride as a component of aluminium-bath electrolyte. (Ispytaniya ftoristogo magniya kak komponenta elektrolita alyuminievykh vann.) 136-5-11/14

PERIODICAL: "Tsvetnye Metally" (Non-ferrous Metals), 1957, No.5, pp. 70 - 74 (U.S.S.R.)

ABSTRACT: In the first section of this work laboratory experiments to elucidate the joint influence of magnesium and calcium fluorides on the properties of aluminium-bath electrolyte are described. The results are shown graphically as a fusion diagram for the quasi-binary system: [2.5 $NaF.AlF_3$ + 5 wt % CaF_2 + 5 wt % MgF_2] - Al_2O_3; as a graph showing the influence of magnesite calcining temperature on the rate of its solution in cryolite melts at 1 000 and 1 020 °C; and as plots of solubility of aluminium in the electrolyte, solubility of alumina, angle of wetting, conductivity, density and melting point against the weight % of CaF_2 and MgF_2. The laboratory results indicate electrolytes should contain 6.5 - 7% MgF_2 for a total content of the fluoride of up to 10 wt %, a suitable cryolite ratio being 2.5 - 2.6. The second part of the paper deals with full scale tests of magnesium-fluoride

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Tests of magnesium fluoride as a component of aluminium-bath electrolyte. (Cont.) 136-5-11/14

containing electrolytes, started at the Ural Aluminium Works (Uralskom Alyuminievom Zavode) in 1955 and is still continuing. These tests have shown the following favourable effects of MgF_2 additions: increased yield with respect to current and energy; a lower bath working temperature; decreased consumption of anodic material; higher CO_2 content in the anodic gases; lower consumption of aluminium fluoride; better operating conditions and improved working of the bath. Reasons for these effects are discussed and it is noted that favourable effects have also been obtained at aluminium works in Czechoslovakia and at Fushun in China (Chu Tzu Sen. "Influence of magnesium fluoride on the electrolysis of cryolite-alumina melts". Dissertation, Mukden, 1956.). At the latter works, sixteen MgF_2-containing baths are working at the present time. There are 7 references, 5 of which are Slavic.

Card 2/2

ASSOCIATION: Mintsvetmetzoloto.

AVAILABLE:

SOV/137-59-1-462

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

AUTHORS: Belyayev, A. I., Firsanova, L. A.

TITLE: Refining of Aluminum by Distillation in Conjunction With Subhaloid Compounds (Rafinirovaniye alyuminiya distillyatsiyey cherez subgaloidnyye soyedineniya)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Tsvetn. metallurgiya, 1958, Nr 1, pp 116-120

ABSTRACT: The process of refining of Al by means of distillation (D) in conjunction with subfluoride and subchloride was investigated with the aid of a laboratory vacuum device; the behavior of impurities was studied concurrently. It was found that the behavior of the impurities is identical during D of Al with either subfluoride or subchloride. Si and Fe may be present in the initial Al in significant quantities without passing into the refined metal; Cu, Ti, and Mn pass into the refined metal more readily, where Mg, Zn, and Ca pass into the final metal so easily that their concentration in the initial Al must be kept to a minimum. The purity of refined metal varies from 99.8% Al, during D of Si-Al, to 99.999% Al during D of primary Al.

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Refining of Aluminum by Distillation in Conjunction With Subhaloid Compounds

In order to improve the purity of refined Al multiple D of the condensate should also be employed.

B. L.

Card 2/2

BELYAYEV, A.I.; FIRSANOVA, L.A.

Effect of aluminum on anode effect during electrolysis of cryolite - alumina melts. Zhur. prikl. khim. 31 no.9:1361-1366 S '58. (MIRA 11:10)

(Aluminum--Electrometallurgy)

FIRSANOVA, L.A.

18(4) PHASE I BOOK EXPLOITATION SOV/3171

Belyayev, Anatoliy Ivanovich, and Lidiya Alekseyevna Firsanova

Odnovalentnyy alyuminiy v metallurgicheskikh protsessakh (Monovalent Aluminum in Metallurgical Processes) Moscow, Metallurgizdat, 1959. 142 p. Errata slip inserted. 1,550 copies printed.

Reviewers: B. V. Nekrasov, Corresponding Member, Academy of Sciences, USSR, and G. Ye. Vol'fson, Engineer; Ed. of Publishing House: L. M. El'kind; Tech. Ed.: A. I. Karasev.

PURPOSE: This book is intended for technical personnel in the aluminum industry, personnel at scientific research institutes, and students of schools of higher education.

COVERAGE: The book contains theoretical and experimental material on "subcompounds" (lower-valence compounds) of aluminum and their role in the production of electrolytic and ultrapure aluminum. No personalities are mentioned. There are 98 references: 43 Soviet, 30 English, 22 German, 2 French, and 1 Italian.

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TABLE OF CONTENTS:

AVAILABLE: Library of Congress (TN775.B347)

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VK/lsb
2-3-60

18(4)

AUTHORS: Belyayev, A. I., Firsanova, L. A. SOV/163-59-1-12/50

TITLE: Influence of Aluminum Upon the Anodic Effect in the Electrolysis of Kryolithe-Alumina Melts (Vliyaniye alyuminiya na anodnyy effekt pri elektrolize kriolito-glinozemnykh rasplavov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 53-57 (USSR)

ABSTRACT: In previous papers the influence of excess (not dissolved) alumina in the electrolyte (Ref 1) and of the gaseous phase (Ref 2) upon the anodic effect in the electrolysis of kryolithe-alumina melts was investigated. As, however, in industrial aluminum baths the electrolyte is continuously in contact with the molten aluminum, in this paper the influence of the aluminum upon the anodic effect in the electrolysis of kryolithe-alumina melts was investigated according to the usual method of determining the critical current density at the carbon anode (Ref 3). There was only one difference namely that the critical amperage I_{cr} was measured in the presence of the aluminum previously introduced into the electrolyte. In a number of cases, moreover, the critical amperage was not

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measured with an amperemeter, but was determined by oscillographs of the anodic effect. The information gained shows that the critical current density greatly increases about 1 minute after the aluminum has been dipped into the melt (corresponding to the time required by the aluminum to melt). If the electrolyte is very acid, this increase is smaller than in less acid or in basic electrolytes. Later on the critical current density decreases again, the decrease proceeding more rapidly in acid electrolytes. Afterwards the critical current density stabilizes at lower values (even below the initial ones) than in less acid or basic electrolytes, in which the critical current density decreases more slowly with time. The maximum in the curves describing the critical current density versus time function (the maximum occurring immediately after charging the metal) is explained as follows: Immediately after charging the metal the aluminum is energetically dissolved, producing surface-active ions Al^{+} (in acid melts) or Na_2^{+} (in basic melts). They lead to a considerable reduction of the potential between the electrolyte and the carbon anode and hence to an increase of the critical current

density. It is shown that in the region of the electrolyte surrounding the anode there proceed reactions which lead to a destruction of these ions, due to an interaction of the corresponding sub-compounds with CO_2 (which is separated at the anode). There are 3 figures and 3 Soviet references.

ASSOCIATION: Moskovskiy institut tsvetnykh metallov i zolota (Moscow Institute of Non-ferrous Metals and Gold)

SUBMITTED: June 9, 1958

FIRSANOVA, L.A.; BELYAYEV, A.I.

Preparing beryllium-aluminum-copper alloys by the reduction of gaseous beryllium chloride. Izv.vys.ucheb.zav.; tsvet.met. 2 no.1: 59-66 '59. (MIRA 12:5)

1. Moskovskiy institut tsvetnykh metallov i zolota. Kafedra metallurgii legkikh metallov.
(Beryllium-aluminum-copper alloys)
(Reduction, Chemical)

67795

5.1310

SOV/180-59-5-3/37

AUTHORS: Belyayev, A.I., and Firsanova, L.A. (Moscow)

TITLE: Influence of Aluminium Oxide on Losses and Current Efficiency of Aluminium in Electrolysis of Cryolite-Alumina Melts

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 5, pp 27-34 (USSR)

ABSTRACT: The authors point to the differences in published opinions on the technically important question of the optimum content of alumina for aluminium electrolysis with cryolite-alumina melts. They outline the literature on the nature and properties of such melts and go on to describe their own work to solve this question. The first experiments on aluminium losses were divided into two series with closed and open graphite containers, respectively. The containers were 52 mm outer diameter, 36 inner and 120 high and held 100 g of salt plus oxide. The cryolite ratio was varied in the range 2 - 3, the temperature being kept at 1000 ± 10 °C. Aluminium loss is plotted against cryolite ratio in Fig 1 for alumina-contents up to 10%. The curves show that in general with a cryolite ratio over 2.4 losses rise considerably

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Influence of Aluminium Oxide on Losses and Current Efficiency of Aluminium in Electrolysis of Cryolite-Alumina Melts

with increasing alumina content; with lower ratio values the general effect is opposite. With the open container the ratio was varied from 2.2 to 3 and the alumina to 15%, the completeness of solution being checked visually before immersion of the aluminium. The aluminium loss vs Al_2O_3 content curves for various cryolite ratios (Fig 2a) show maxima whose positions depend on the ratio. Fig 2b (loss vs cryolite ratio) shows the favourable effect of undissolved alumina on the loss: with alumina-saturated melts the metal losses are 1/50 of those when the Al_2O_3 content is only 10%, but with excessive contents the losses rise. The experiments to find the influence of alumina on current efficiency were carried out on a laboratory unit (Fig 4) with melts containing 7% MgF_2 + 3% CaF_2 and with various cryolite ratios. To reduce solution of the corundum crucible some of the cryolite-alumina melts were prepared beforehand in a graphite container at 1000 °C and the alumina content was kept > 4%; others were melted directly in the corundum container at 970 °C. The corundum crucible (with 170 g

SOV/180-59-5-3/37

Influence of Aluminium Oxide on Losses and Current Efficiency of Aluminium in Electrolysis of Cryolite-Alumina Melts

of electrolyte) was enclosed in a graphite container in the furnace, and a temperature of 970 ± 10 °C was maintained. The current was constant at 5 amp; cathodic current densities of 1.1 and 0.623 amp/cm2 were used. The results are shown in Figs 5 and 6 where the current efficiency is plotted against Al_2O_3 content for partly (curves 1 and 3) and fully (curves 2 and 4) dissolved alumina. The efficiency falls under the influence of dissolved alumina and rises in the presence of undissolved particles of alumina, especially in alumina-saturated melts. The authors maintain that the influence of alumina concentration on metal losses and current efficiency can be explained only on the ionic view of the nature of cryolite-alumina melts and complex formation in this system.

Card 3/3

There are 6 figures and 11 references, 6 of which are Soviet, 3 English, 1 French and 1 Italian.

SUBMITTED: 11 June, 1959

S/081/62/000/010/053/085
B168/B180

AUTHORS: Belyayev, A. I., Firsanova, L. A.

TITLE: Increasing the purity of aluminum by distillation through subfluoride

PERIODICAL: Referativnyy zhurnal. Khimiya, no.10, 1962, 396, abstract 10K50 (Sb. nauchn. tr. In-t tsvetn. met. im. M. I. Kalinina, v. 33, 1960, 120-131)

TEXT: The following conditions have been established for the distillation of aluminum through subfluoride, giving aluminum with a purity of 99.99999% (according to data obtained by spectrum analysis). Aluminum grade A00 (A00) is used as starting metal. AlF_3 (industrial) is refined by double sublimation in a vacuum. The equipment is made of graphite grade PB (RV), calcined in a vacuum at 1000°C. Temperature of Al distillation 1070°C, temperature of AlF_3 sublimation 1000°C. Residual pressure in the system 0.15-0.2 mm Hg. The AlF_3 : Al ratio is . . .

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S/081/62/000/010/053/085
B168/B180

Increasing the purity...

1.6-1.7 w/w. The air entering the apparatus must be as free as possible from dust particles. After separation from AlF_3, the Al obtained under these conditions, was tried out in experimental semiconductor appliances and gave satisfactory results. [Abstracter's note: Complete translation.]

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S/149/61/000/002/016/017
A006/A001

AUTHORS: Belyayev, A.I., Zhemchuzhina, Ye.A., Firsanova, L.A.

TITLE: The All-Union Conference on Physical Chemistry of Molten Salts and Slags

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Tsvetnaya metallurgiya, 1961, No. 2, pp. 162 - 165

TEXT: The All-Union Conference on physical chemistry of molten salts and slags was convened from November 22 - 25, 1960 in Sverdlovsk at the Institut elektrokhimii Ural'skogo filiala AN SSSR (Institute of Electrochemistry of the Ural Branch AS USSR). The Conference heard the following reports: Academician A.N. Frunkin's introductory report on the actual development of problems relating to the physical chemistry of molten electrolytes; Yu.K. Delimarskiy, Kiyev, on "Kinetics of Electrode Processes in Molten Salts"; N.K. Voskresenskaya, Moscow, on the present state of investigating thermodynamical properties of molten salts; Yu.V. Baymakov, Leningrad, on "Molten Salt - Metal Equilibrium". A number of reports dealt with results from investigating physico-chemical properties of salt systems, including papers delivered by: M.V. Kamenetskiy, Leningrad, on "Ternary

S/149/61/000/002/016/017
A006/A001

The All-Union Conference on Physical Chemistry of Molten Salts and Slags

Systems of Barium, Potassium, Titanium Chlorides and of Barium, Sodium and Titanium"; V.G. Selivanov, Dnepropetrovsk, on results of investigating the physico-chemical properties of molten fluoro-borate oxides (Na_2BF_4 - NaF - B_2O_3) and fluoro-titanate-oxide (Na_2TiF_6 - NaF - TiO_2) systems; M.M. Vetyukov, Leningrad, on the properties and structure of melts of the sodium fluoride - aluminum fluoride system; L.A. Firsanova, Moscow, on the physico-chemical properties of cryolitic melts and of aluminum bath electrolytes containing barium chloride; Kh.L. Strel'tsa, Leningrad, on results of investigations into physico-chemical properties of melts of systems corresponding to the electrolytic composition of magnesium baths and containing $CaCl_2$ and $BaCl_2$. A.I. Belyayev, Moscow, on results of investigating molten salts with the aid of radio-active gamma radiation; I.D. Sokolova, Moscow, on "Surface Tension of Molten Salts"; R.V. Chernov, Kiyev, on investigating specific electric conductivity of $TiCl_3$-MeCl melts; B.F. Markov, Kiyev, on electro-conductivity of binary salt melts in connection with phase diagrams; G.V. Vorobyev, Sverdlovsk, on results of measuring electric conductivity of systems of molten alkali metal carbonates. A number of reports dealt with results of investigating molten salt-metal systems: N.F. Bukun, Berezniki, on

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S/149/61/000/002/016/017
A006/A001

The All-Union Conference on Physical Chemistry of Molten Salts and Slags

results of investigating magnesium dissolution in molten chlorides; A.P. Palkin, Voronezh, on peculiarities in the reaction of salts with metals in mutual systems of displacement in molten state; S.A. Zaretskiy and V.B. Busse-Machukas, Moscow, on equilibria of $2KCl + Ca \rightleftarrows 2K + CaCl_2$ and $Na + KCl \rightleftarrows NaCl + K$; Ye.A. Zhemchuzhina, Moscow, on "The Effect of Metallic Admixtures in Aluminum on Interphase Tension and its Losses in Cryolitic-Alumina Melts"; The electrochemical extraction of zirconium from melts on potassium fluorozirconate base (K_2ZrF_6) and alkali metal chlorides was treated in the following reports: A.I. Yevstyukhin, Moscow, on positive results of electrolysis in closed cells with neutral atmosphere; M.V. Smirnov, Sverdlovsk, on equilibrium potentials of zirconium in chloride and mixed fluoro-chloride electrolytes; The following papers were concentrated on physical chemistry of molten slags: V.L. Kheyfets, Leningrad, on "The Conditions of Metals Dissolved in Non-Ferrous Metallurgical Slags"; D.M. Chizhikov, Moscow, on some physico-chemical properties of silicate melts, containing heavy non-ferrous metals; I.N. Zakhatov, Sverdlovsk, on results of investigating the solubility of chromium oxide in molten slags; A.A. Velikanov, Kiyev, on "Electrochemical Investigation of Molten Sulfides of Heavy Metals; The Conference recommended to concentrate

Card 3/4

S/149/61/000/002/016/017
A006/A001

The All-Union Conference on Physical Chemistry of Molten Salts and Slags

scientific research on the molecular-ionic structure of molten salts and slags; thermodynamics of salt and slag melts; the structure of molten electrolytes; electrochemical investigation of melts; surface phenomena in electrolytes and other fields. It was suggested to convene the next Conference in 1962 in Kiyev.

BELYAYEV, A.I. (Moskva); FIRSANOVA, L.A. (Moskva)

Effect of barium chloride on the physicochemical properties of cryolite-alumina melts. Izv. AN SSSR. Otd. tekh. nauk. Met. i topl. no.4:3-11 Jl-Ag '61. (MIRA 14:8)
(Aluminum--Electrometallurgy)
(Barium chloride)

22799

S/136/61/000/005/002/008
E073/E535

18.3100A also 1087

AUTHORS: Belyayev, A.I., Firsanova, L. A., Vol'fson, G.Ye. and Katon, Ya. Sh.

TITLE: On the Problem of Interaction of Barium Chloride with Cryolite Melts and its Influence on the Technology of Electrolytic Refining of Aluminium

PERIODICAL: Tsvetnyye metally, 1961, No.5, pp.43-45

TEXT: In electrolytic refining of aluminium by means of the three-layer method, an electrolyte is used consisting of barium chloride, cryolite, aluminium fluoride and sodium chloride. Chemical analyses of electrolytes reveal the presence in the electrolytes of barium fluoride in quantities reaching 17 to 18%. This indicates interaction in such melts of barium chloride with the fluorides, for instance in accordance with the reaction:

$$3BaCl_2 + 2AlF_3 \rightarrow 3BaF_2 + 2AlCl_3 \quad (1)$$

The results are given of analyses of the electrolytes from baths for electrolytic refining of Al with various cryolite ratios, Table 1. (K.o. - cryolite ratio; composition of the electrolyte,

Card 1/4

wt.%). It can be seen that with decreasing cryolite ratios, from 1.94 to 1.33 (i.e. with increasing AlF_3 content), the content of BaF_2 increases from 1.89% to 17.31%. According to the reaction, Eq.(1), in addition to BaF_2, volatile $AlCl_3$ forms, which leads to a partial loss of Cl. For the purpose of verifying the possibility of the reaction expressed by Eq.(1), synthetic mixtures of salts were produced with cryolite ratios between 1 and 3 containing 3 to 60 wt.% $BaCl_2$. This mixture was maintained in the molten state for 1 hour at 1000°C and then rapidly cooled and analysed chemically for the contents of Na, Al, Ba and Cl. From the analytically determined Ba and Cl contents, the respective content of $BaCl_2$ was calculated and these values were compared. A plot is made of the analytically determined $BaCl_2$ content (%, based on the % of Cl_2 in the melt) as a function of the $BaCl_2$ content in the charge for cryolite ratios (K.o.) of 2.8 to 1.0 (the uppermost line applies to the initial $BaCl_2$ content in the charge). The results show that the reaction expressed by Eq.(1) does indeed take place and leads to an accumulation of BaF_2 in the electrolyte. This is brought about by an increase in the AlF_3 content

On the Problem of Interaction ... S/136/61/000/005/002/008
E073/E535

of the melt, i.e. by a decrease in the cryolite ratio. The following conclusions are arrived at:
1. Considerable interaction was observed in melts with cryolite ratios below 2, whereby as a result of this interaction BaF_2 forms which has an unfavourable influence on the properties of the melt.
2. To improve the operation of industrial baths in electrolytic refining of Al, the cryolite ratio must not drop below 1.7.
3. It is necessary to develop a rapid method of analysis of the electrolyte which is applicable to electrolytic refining of Al for the purpose of systematic checking of the composition and maintaining an optimum cryolite ratio. There are 1 figure and 2 tables.

ASSOCIATIONS: Institut tsvetnykh metallov imeni M. I. Kalinina (Institute of Nonferrous Metals imeni M.I.Kalinin) (Belyayev and Firsanova).
Volkhovskiy alyuminiyevyy zavod (Volkhov Aluminium Works) (Vol'fson and Katon)

FIRSANOVA, L.A.; BELYAYEV, A.I.

Effect of salt additions on aluminum solubility in cryolite-alumina melts. Izv. vys. ucheb. zav.; tsvet. met. 4 no.6:72-78 '61. (MIRA 14:12)

1. Krasnoyarskiy institut tsvetnykh metallov, kafedra metallurgii legkikh metallov.
(Aluminum--Metallurgy)

BELYAYEV, A.I.; FIRSANOVA, L.A.; VOL'FSON, G.Ye.; LAZAREV, G.I.

Effect of cathodic current density and the cryolite relation of electrolytes on the current efficiency in aluminum production. Izv. vys. ucheb. zav.; tsvet. met. 4 no.5:117-122 '61. (MIRA 14:10)

1. Krasnoyarskiy institut tsvetnykh metallov i Volkhovskiy alyuminiyevyy zavod.
(Aluminum—Electrometallurgy)

FIRSANOVA, L.A.; BELYAYEV, A.I.

Effect of salt admixtures on the solubility and the speed of alumina solution in cryolite melts. Izv.vys.ucheb.zav.; tsvet. met. 5 no.1:77-81 '62. (MIRA 15:2)

1. Krasnoyarskiy institut tsvetnykh metallov, kafedra metallurgii legkikh metallov.
(Alumina) (Solubility)

FIRSANOVA, L.A.; BELYAYEV, A.I.

Loss of aluminum in cryolite melts. Izv. vys. ucheb. zav.; tsvet. met. 5 no.2:88-94 '62. (MIRA 15:3)

1. Krasnoyarskiy institut tsvetnykh metallov, kafedra metallurgii legkikh metallov.

(Aluminum--Electrometallurgy)

FIRSANOVA, L.A.; BELYAYEV, A.I.

Effect of crucible material and design of the cell on aluminum losses in cryolite melts. Izv.vys.ucheb.zav.; tsvet.met. 5 no.3:53-58 '62. (MIRA 15:11)

1. Krasnoyarskiy institut tsvetnykh metallov, kafedra metallurgii legkikh metallov.
(Aluminum--Electrometallurgy)

FIRSANOVA, L.A.; BELEAEV, A.I. [Belyayev, A.I.]

Aluminum losses in cryolite fusions. Analele metalurgie 16 no.4:81-87 O-D '62.

MASHOVETS, V.P.; FORSBLOM, G.V. Prinimal uchastiye POPOV, R.B.; GULYANITSKIY, B.S., inzh., retsenzent; FIRSANOVA, L.A., red.; ATTOPOVICH, M.K., tekhn. red.

[Electrolytic production of aluminum] Elektroliticheskoe proizvodstvo aliuminiia; prakticheskoe rukovodstvo dlia rabochikh, brigadirov i masterov tsekhov elektroliza aliuminevykh zavodov. Moskva, Metallurgizdat, 1951. 220 p. (MIRA 16:7)

1. Vsesoyuznyy alyuminiyevo-magniyevyy institut (for Mashovets, Forsblom).

(Aluminum--Electrometallurgy)

ACCESSION NR: AT4001237 S/3031/63/000/035/0101/0107

AUTHORS: Belyayev, A. I.; Firsanova, L. A.; Vol'fson, G. Ye.; Lazarev, G. I.; Pal'chikov, A. I.

TITLE: Obtaining ultrapure aluminum by distillation through subfluoride in a pilot unit

SOURCE: Gosudarstvenny*y institut tsvetny*kh metallov. Sbornik nauchny*kh trudov. Moscow, no. 35, 1963, 101-107

TOPIC TAGS: ultrapure aluminum, ultrapure aluminum production, ultrahigh purity metal, ultrahigh purity metal production, ultrahigh purity aluminum, ultrahigh purity aluminum production

ABSTRACT: Apparatus for the production of ultrapure aluminum by distillation via the hypofluoride, developed at the Institut tsvetny*kh metallov im. M. I. Kalinina (Institute of Nonferrous Metals) by A. I. Belyayev and L. A. Firsanova (Trudy Mintsvetmet-zoloto im. M. I. Kalinina, no. 33, 1960) is described briefly. In this method the purified aluminum is brought in contact with vapor-

Card 1/2

ACCESSION NR: AT4001237

ized aluminum fluoride at 1050° and residual pressure 10^{-1}--10^{-2} mm Hg. The produced aluminum hypofluoride is decomposed into pure aluminum and aluminum fluoride which is returned to the cycle. During the course of the trials of the aluminum distillation technology, conditions were found under which large aluminum ingots of specified shape can be produced in the condenser, with simultaneous production of the return condensate (Al + AlF_3 with small amount of disperse aluminum). Tests with the pilot plant have shown the possibility of producing by this method superpure aluminum (99.999%) in amounts up to 1 kg a day. The aluminum obtained in the pilot plant was found suitable for production of semiconductor rectifiers, since the siluminum produced from it has less than 0.0001% Fe, 0.0006% Mg, and 0.0001% Cu. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: Gosudarstvenny*y institut tsvetny*kh metallov (State Institute of Nonferrous Metals)

Card 2/2

CHECHENTSEV, V.N.; FIRSANOVA, L.A.; FEDORCHUK, O.K.

Thermodynamic investigation of the reaction $Si + SiCl_4 \rightleftarrows 2SiCl_2$. Izv. vys. ucheb. zav.; tsvet. met. 8 no.4:97-102 '65. (MIRA 18:9)

1. Kafedra proizvodstva chistykh metallov i poluprovodnikovykh materialov Moskovskogo instituta stali i splavov.

L 13532-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JW

ACC NR: AP5028979 SOURCE CODE: UR/0149/65/000/004/0097/0102

AUTHOR: Chechentsev, V. N.; Firsanova, L. A.; Fedorchuk, O. K.

ORG: Moscow Institute of Steel and Alloys, Production of Pure Metals and Semiconducting Materials Dept (Moskovskiy institut stali i splavov, Kafedra proizvodstva chistykh metallov i poluprovodnikovykh materialov

TITLE: Thermodynamic study of the reaction $Si + SiCl_4 \rightleftarrows 2\ SiCl_2$

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 4, 1965, 97-102

TOPIC TAGS: silicon, chlorine compound, equilibrium constant, thermodynamic calculation, chemical kinetics

ABSTRACT: In view of discrepancies in the findings of Schaefer and Nickl (Z. anorg. und allgem. Chem., B. 274, 250, 1953) on the equilibrium of the reaction

$$Si + SiCl_4 \rightleftarrows 2SiCl_2$$

Card 1/3 UDC: 669.782

L 13532-66
ACC NR: AP5028979

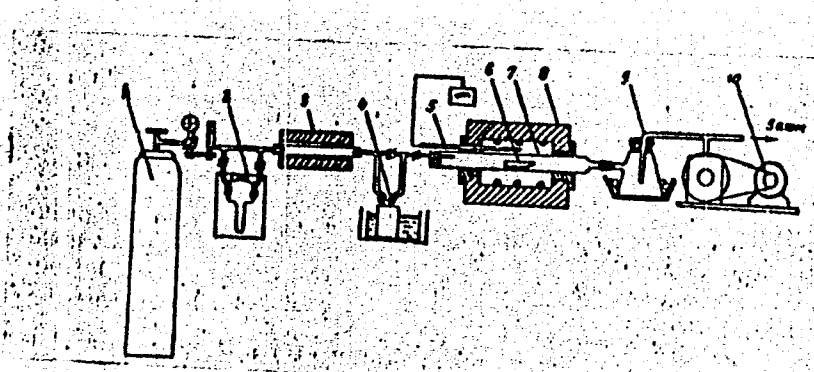


Fig. 1. Diagram of setup for determining the equilibrium constant of reaction (1) by the "current" method:

1 - cylinder with Ar; 2 - flow meter; 3 - furnace for purification of Ar; 4 - evaporator with $SiCl_4$; 5 - thermocouple; 6 - quartz boat with Si; 7 - reaction vessel; 8 - furnace with silit heaters; 9 - condenser; 10 - VN-2 pump

Card 2/3

L 13532-66

ACC NR: AP5028979

and considering that reliable knowledge of the values of thermodynamic functions will facilitate the selection of the optimal conditions for refining Si by the transport reaction method, the authors investigated this equilibrium in the temperature range of 1200-1300°C on employing the "current" method (Fig. 1) where a current of $SiCl_4$ is passed (by means of argon) over a Si-containing boat at a given temperature. Extrapolation of the obtained values of α (mole fraction of $SiCl_4$ converted to $SiCl_2$) to zero flow rate of $SiCl_4$ gives the equilibrium position. On this basis the temperature dependence of the equilibrium constant C_e was determined and hence also the values of the isobaric-isothermal potential ΔZ° of the reaction were calculated: ΔZ° varies linearly from +6790 cal/mole $SiCl_4$ at 1200°C to -1395 cal/mole $SiCl_4$ at 1300°C. The temperature at which the reaction components, taken in standard states, are in an equilibrium, was found to be 1283°C by graphic means for $\log C_e = 0$. The kinetics of the formation of $SiCl_2$ is found to be such that the rate of formation of $SiCl_2$ increases with increasing temperature and, to a lesser extent, with increasing flow rate of $SiCl_4$. The thermal effect of the reaction is calculated at 127,000 cal/mole for the 1200-1300°C temperature range, and hence the reaction is governed by chemical kinetics, i.e. the reaction rate is determined by the rate of chemical interaction. Orig. art. has: 5 figures, 2 tables, 1 formula.

SUB CODE: 07, 11/ SUBM DATE: 10Jul64/ ORIG REF: 001/ OTH REF: 002

Card 3/3

L 46039-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AT6022714 SOURCE CODE: UR/2848/66/000/041/0281/0289

AUTHORS: Chechentsev, V. N.; Firsanova, L. A.; Zaytsev, V. N.; Matvienko, L. F.

ORG: Moscow Institute for Steel and Alloys, Department for Manufacture of Pure Metals and Semiconductor Materials (Moskovskiy institut stali i splavov, Kafedra proizvodstva chistykh metallov i poluprovodnikovykh materialov) 38 BH

TITLE: Obtaining high purity silicon by vacuum distillation for the lower chloride

SOURCE: Moscow. Institut stali i splavov. Sbornik, no. 41, 1966. Fizicheskaya khimiya metallurgicheskikh protsessov i sistem (Physical chemistry of metallurgical processes and systems), 281-289

TOPIC TAGS: silicon, silicon compound, vacuum distillation

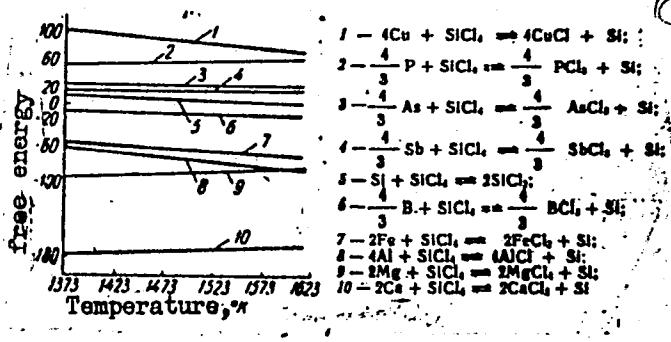
ABSTRACT: The kinetics and thermodynamics of the silicon purification by vacuum distillation from $SiCl_2$ was studied. The standard free energy calculations for a number of reactions of $SiCl_4$ with various elements were carried out by the method of A. N. Krestovnikov i. dr. (Spravochnik po raschetam metallurgicheskikh reaktsiy, Metallurgizdat, 1963). The results of the calculations are presented graphically (see Fig. 1). These calculations showed the feasibility of obtaining high purity silicon according to the reaction

$$Si + SiCl_4 \underset{r_1}{\overset{r_2}{\rightleftharpoons}} 2SiCl_2.$$

Card 1/3

L 46039-66
ACC NR: AT6022714

Fig. 1. Dependence of the free energy on the temperature for a number of reactions between $SiCl_4$ and different elements.

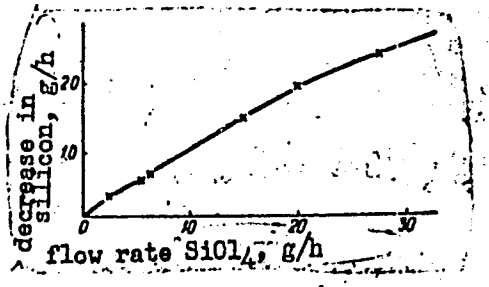


The above reaction was studied in vacuum over the temperature interval of 1150 to 1300C at an average working pressure of $SiCl_4$ of 0.2—0.4 atm. A schematic of the experimental installation is presented, and the experimental results are presented graphically (see Fig. 2). It was found that the optimum conditions for the purification of silicon by the above method are: reaction temperature - 1280C; rate of $SiCl_4$ flow - 20 g/hour; duration of process - 3 hours.

Card 2/3

L 46039-66
ACC NR: AT6022714

Fig. 2. Dependence of the amount of transported silicon on the rate of supply of $SiCl_4$ at 1250C.



Orig. art. has: 1 table, 3 graphs, and 1 equation.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 005

Card 3/3

TRUKHTENKOVA, N.Ye.; KOPETSKAYA, D.L.; FIRSANOVA, N.Ye.

Bleached aspen sulfite woodpulp in papermaking. Bum.prom. 37 no.12:11-16 D '62. (MIRA 16:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut tsellyulozno-bumazhnoy promyshlennosti.
(Woodpulp industry--Research)

FIRSAYEV, A.F.

112-2-3301

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 2, p. 113 (USSR)

AUTHOR: Firsayev, A. F.

TITLE: Remote Control Switching of the High Voltage Coils of a Testing, Single Phase Transformer (Distantsionnoye pereklyucheniye vysokovol'tnykh obmotok odnofaznogo ispytatel'nogo transformatora)

PERIODICAL: Sb. rats. predlozh. M-vo elektrotekhn. prom-sti SSSR, 1955, Nr 49, pp. 11-13.

ABSTRACT: Bibliographic entry.

Card 1/1

1ST AND 2ND ORDERS

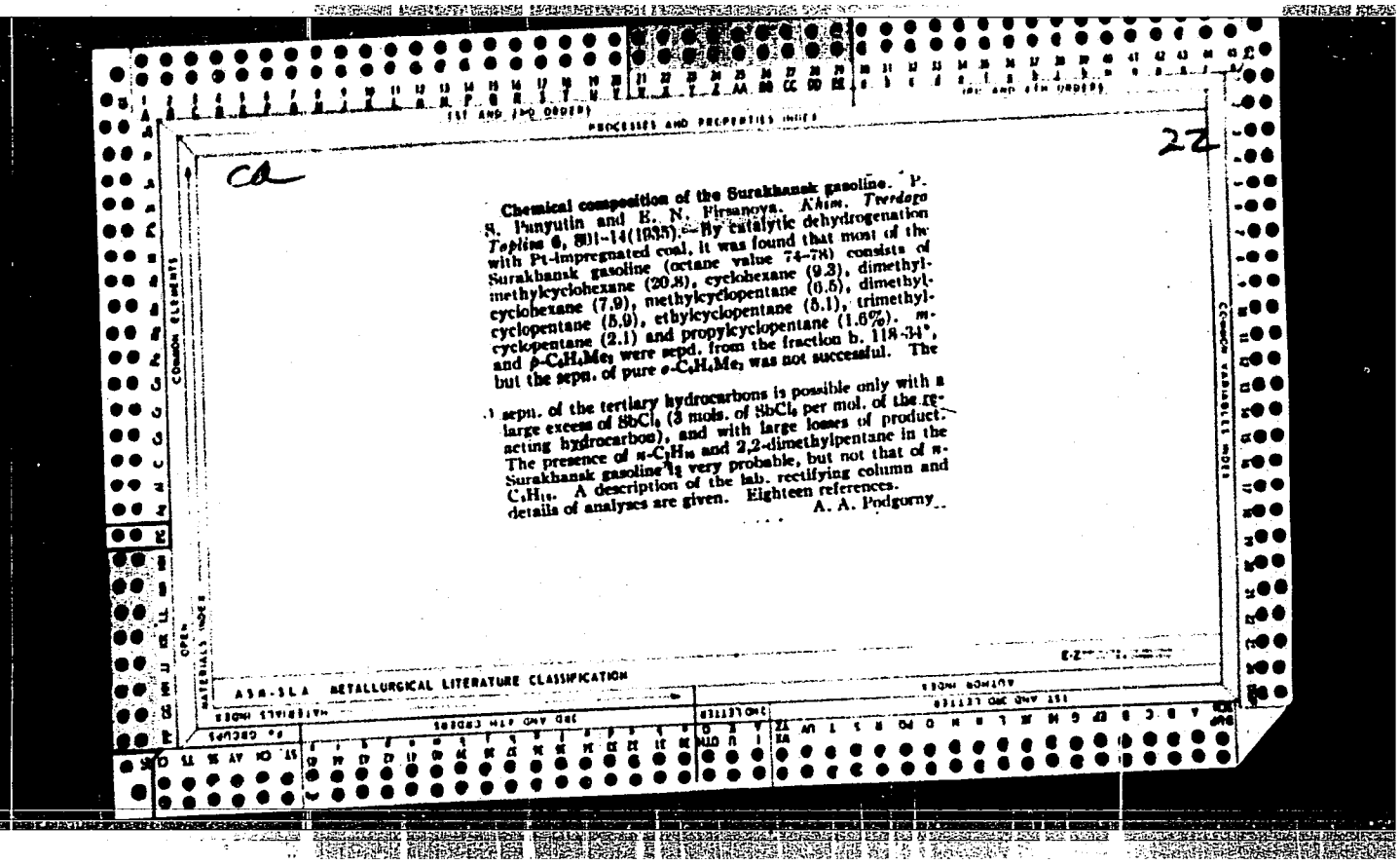
PROCESSES AND PROPERTIES INDEX

B-I-3

Analysis of gasoline. I. Rapoport and M. Fisa-/Antiya (Chim. Tverd. Topl., 1935, 6, 448—459).—Determination of O compounds with $FeCl_3$ + HCl yields incorrect results as unsaturated compounds are also attacked. The Br method for unsaturated compounds cannot be used in presence of O compounds.

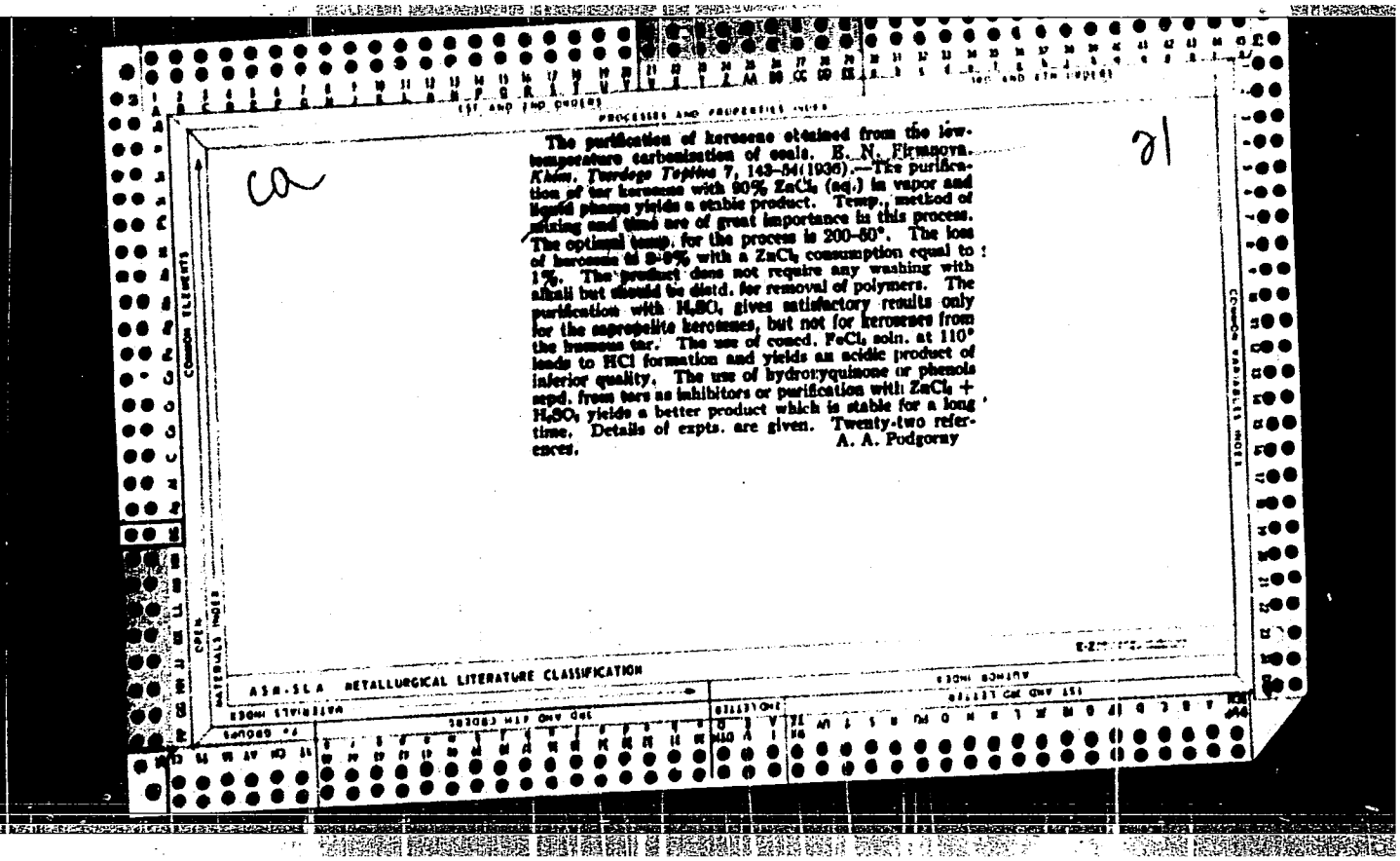
Ch. Abs. (e)

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



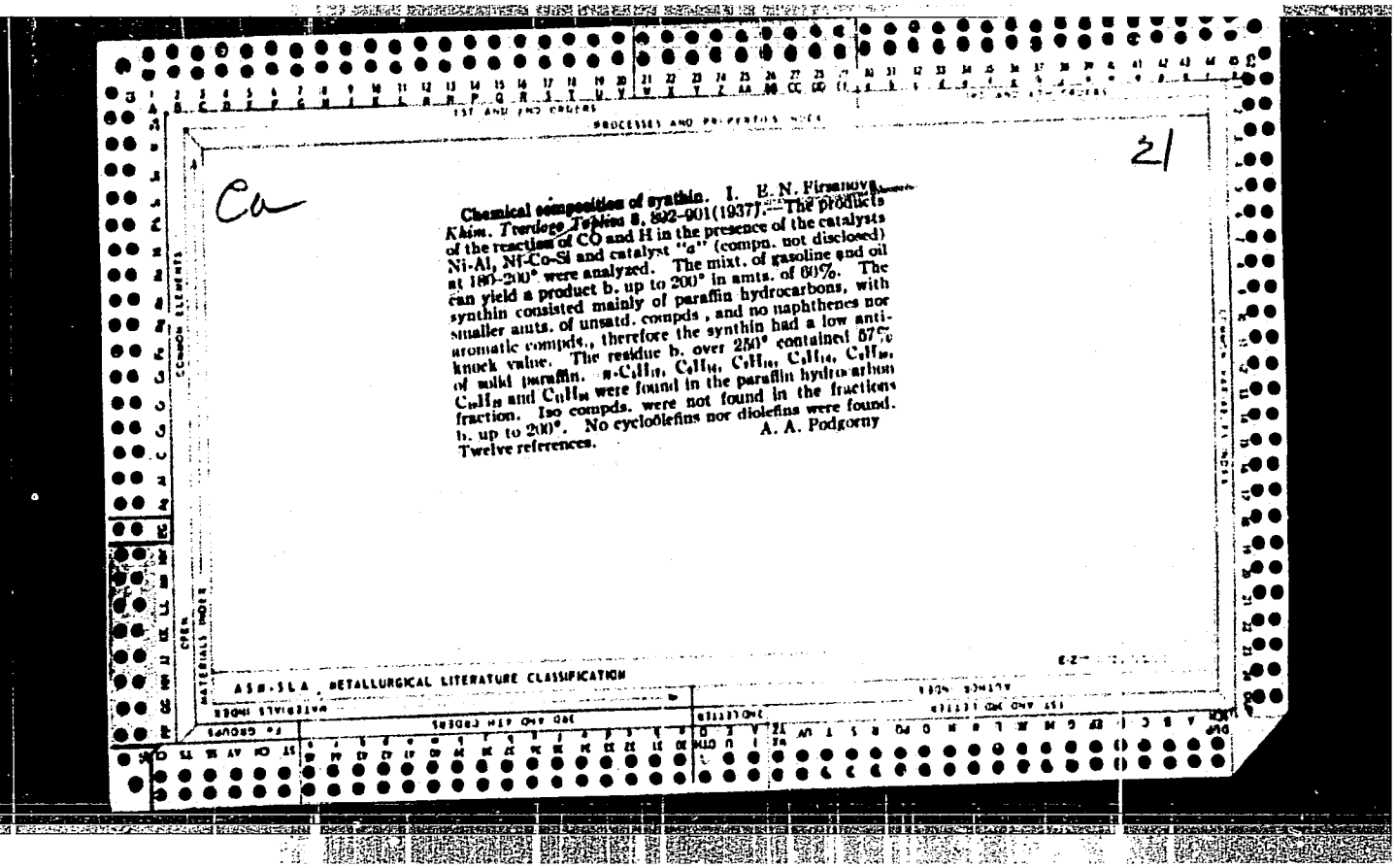
Chemical composition of the Surakhanak gasoline. P. S. Panyutin and E. N. Firsanova. *Khim. Tverdago Topliva* 6, 801–14(1935).—By catalytic dehydrogenation with Pt-impregnated coal, it was found that most of the Surakhanak gasoline (octane value 74–78) consists of methylcyclohexane (20.8), cyclohexane (9.3), dimethylcyclohexane (7.9), methylcyclopentane (6.5), dimethylcyclopentane (5.9), ethylcyclopentane (5.1), trimethylcyclopentane (2.1) and propylcyclopentane (1.6%). *m*-and *p*-$C_6H_4Me_2$ were sepd. from the fraction b. 118–34°, but the sepn. of pure *o*-$C_6H_4Me_2$ was not successful. The sepn. of the tertiary hydrocarbons is possible only with a large excess of $SbCl_5$ (3 mols. of $SbCl_5$ per mol. of the reacting hydrocarbon), and with large losses of product. The presence of *n*-C_7H_{16} and 2,2-dimethylpentane in the Surakhanak gasoline is very probable, but not that of *n*-C_8H_{18}. A description of the lab. rectifying column and details of analyses are given. Eighteen references.

A. A. Podgorny



The purification of kerosene obtained from the low-temperature carbonization of coals. E. N. Firsanova. *Khim. Tverdogo Topliva* 7, 143–54(1936).—The purification of tar kerosene with 90% $ZnCl_2$ (aq.) in vapor and liquid phases yields a stable product. Temp., method of mixing and time are of great importance in this process. The optimal temp. for the process is 200–60°. The loss of kerosene is 5–6% with a $ZnCl_2$ consumption equal to 1%. The product does not require any washing with alkali but should be distd. for removal of polymers. The purification with H_2SO_4 gives satisfactory results only for the sapropelite kerosenes, but not for kerosenes from the humous tar. The use of concd. $FeCl_3$ soln. at 110° leads to HCl formation and yields an acidic product of inferior quality. The use of hydroxyquinone or phenols sepd. from tars as inhibitors or purification with $ZnCl_2$ + H_2SO_4 yields a better product which is stable for a long time. Details of expts. are given. Twenty-two references.

A. A. Podgorny



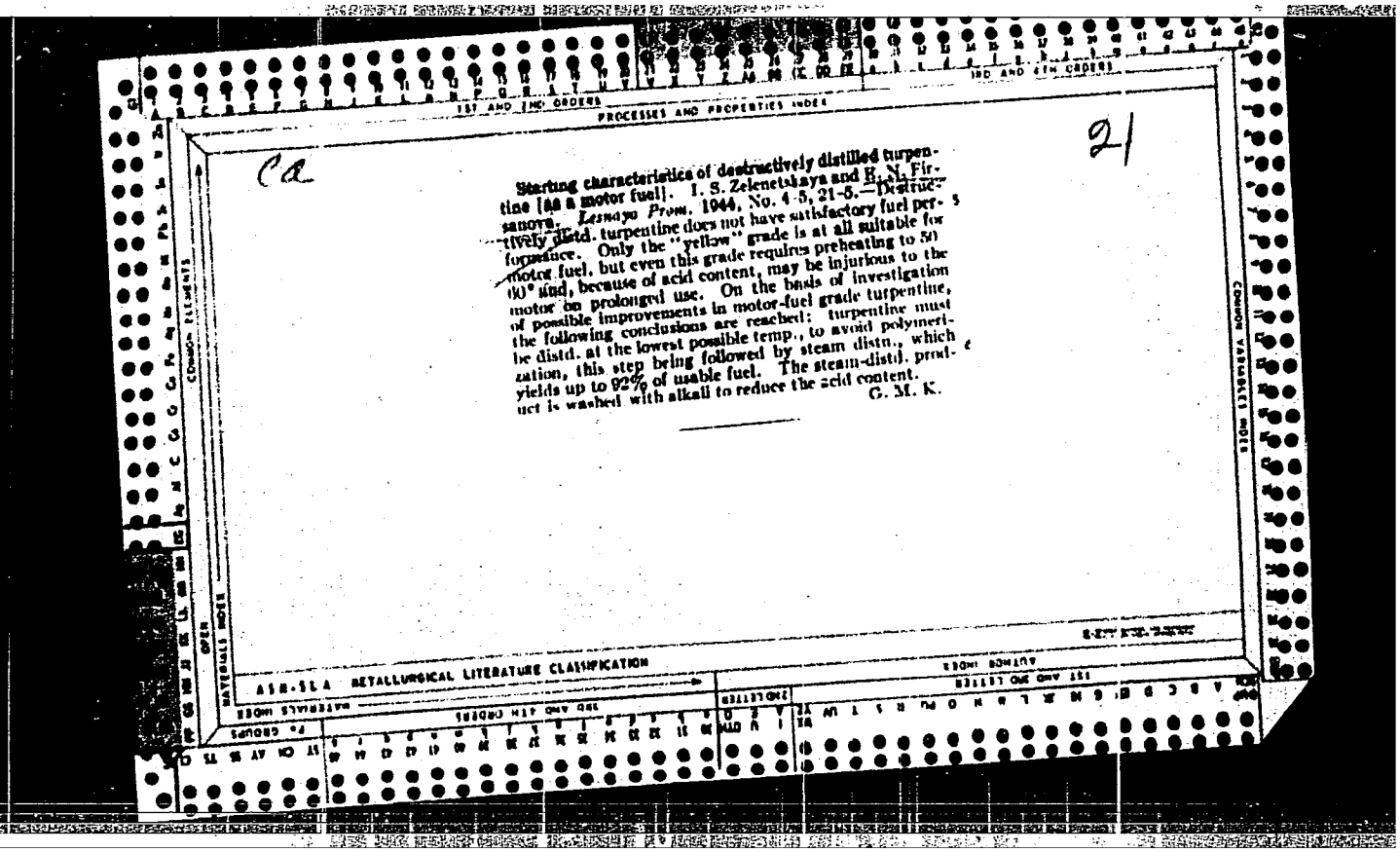
Ca

21

Chemical composition of synthin. I. E. N. Firsanova. *Khim. Tverdogo Topliva* 8, 892–901 (1937).—The products of the reaction of CO and H in the presence of the catalysts Ni-Al, Ni-Co-Si and catalyst "a" (compn. not disclosed) at 180–200° were analyzed. The mixt. of gasoline and oil can yield a product b. up to 200° in amts. of 80%. The synthin consisted mainly of paraffin hydrocarbons, with smaller amts. of unsatd. compds., and no naphthenes nor aromatic compds., therefore the synthin had a low anti-knock value. The residue b. over 250° contained 57% of solid paraffin. n-C_5H_{12}, C_6H_{14}, C_7H_{16}, C_8H_{18}, C_9H_{20} and $C_{10}H_{22}$ were found in the paraffin hydrocarbon fraction. Iso compds. were not found in the fractions b. up to 200°. No cycloölefins nor diolefins were found. Twelve references.

A. A. Podgorny

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

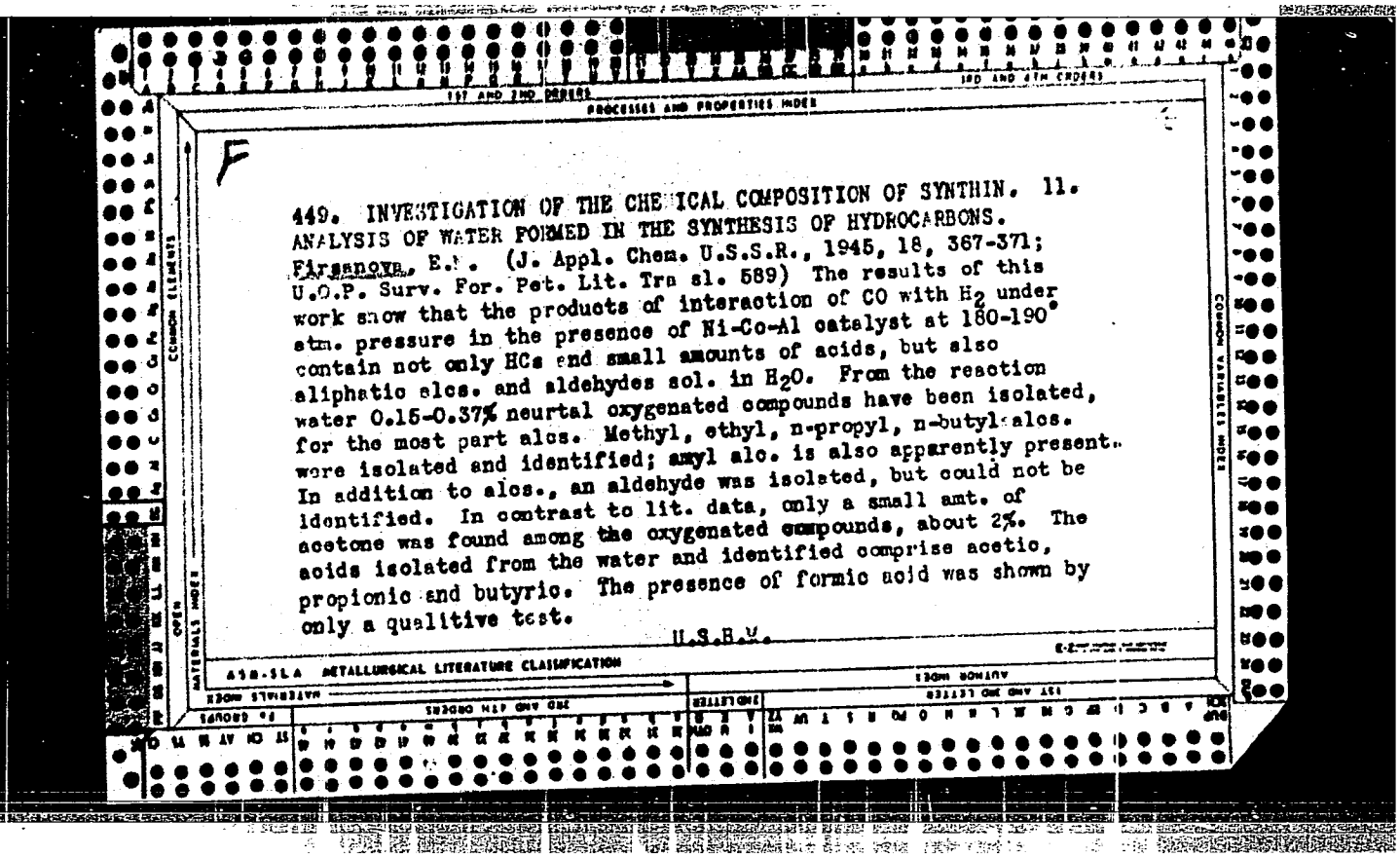
Ca

21

Starting characteristics of destructively distilled turpentine [as a motor fuel]. I. S. Zelenetskaya and E. N. Firsanova. *Lesnaya Prom.* 1944, No. 4-5, 21-5.—Destructively distd. turpentine does not have satisfactory fuel performance. Only the "yellow" grade is at all suitable for motor fuel, but even this grade requires preheating to 50-60° and, because of acid content, may be injurious to the motor on prolonged use. On the basis of investigation of possible improvements in motor-fuel grade turpentine, the following conclusions are reached: turpentine must be distd. at the lowest possible temp., to avoid polymerization, this step bring followed by steam distn., which yields up to 92% of usable fuel. The steam-distd. product is washed with alkali to reduce the acid content.

G. M. K.

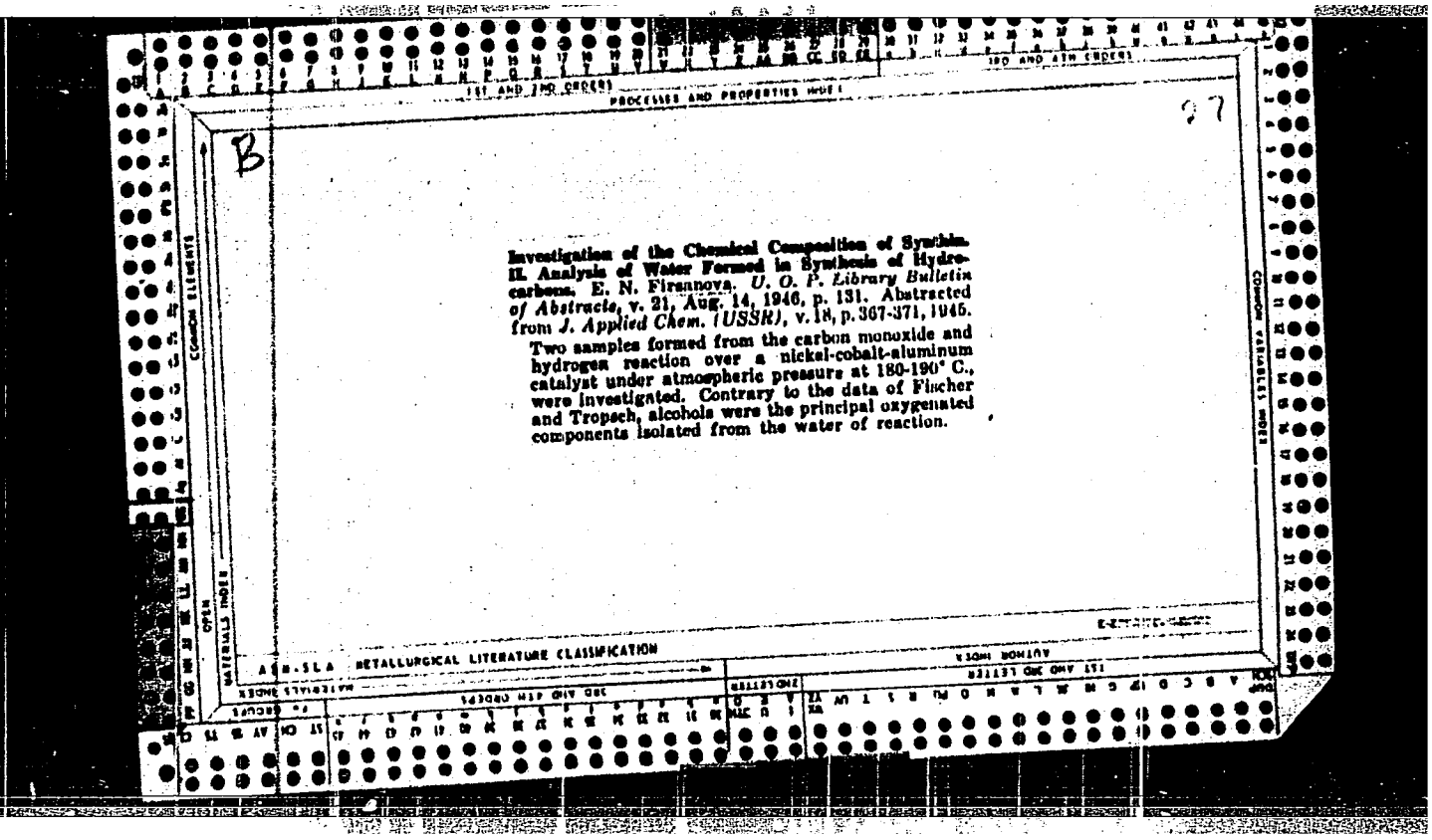
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



F

449. INVESTIGATION OF THE CHE ICAL COMPOSITION OF SYNTHIN. II. ANALYSIS OF WATER FORMED IN THE SYNTHESIS OF HYDROCARBONS. Firsanova, E.I. (J. Appl. Chem. U.S.S.R., 1945, 18, 367-371; U.O.P. Surv. For. Pet. Lit. Trn sl. 589) The results of this work show that the products of interaction of CO with H_2 under atm. pressure in the presence of Ni-Co-Al catalyst at 180-190° contain not only HCs and small amounts of acids, but also aliphatic alcs. and aldehydes sol. in H_2O. From the reaction water 0.15-0.37% neurtal oxygenated compounds have been isolated, for the most part alcs. Methyl, ethyl, n-propyl, n-butyl alcs. were isolated and identified; amyl alc. is also apparently present. In addition to alcs., an aldehyde was isolated, but could not be identified. In contrast to lit. data, only a small amt. of acetone was found among the oxygenated compounds, about 2%. The acids isolated from the water and identified comprise acetic, propionic and butyric. The presence of formic acid was shown by only a qualitive test.

U.S.B.M.



Investigation of the Chemical Composition of Synthin. II. Analysis of Water Formed in Synthesis of Hydrocarbons. E. N. Firsanova. *U. O. P. Library Bulletin of Abstracts*, v. 21, Aug. 14, 1946, p. 131. Abstracted from *J. Applied Chem. (USSR)*, v. 18, p. 367-371, 1945.

Two samples formed from the carbon monoxide and hydrogen reaction over a nickel-cobalt-aluminum catalyst under atmospheric pressure at 180-190° C., were investigated. Contrary to the data of Fischer and Tropsch, alcohols were the principal oxygenated components isolated from the water of reaction.

FIRSANOVA, Ye.N.; NISNEVICH, A.I.

Determining the wear of crankpins by means of cut-out lune gages. Avt.trakt.prom. no.9:15-17 S '54. (MLRA 7:10)

1. NATI.
(Cranks and crankshafts)

FIRSANOVA, Ye.N.; ARABYAN, S.G.

Accelerated method for testing diesel engine lubricating oils in test engines. Trakt.i sel'khozmash. no.1:12-16 Ja '60. (MIRA 13:4)

(Lubrication and lubricants)

FIRSANOVA, Ye. N.

PHASE I BOOK EXPLOITATION SOV/5055

Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh. 3d, 1958.

Gidrodinamicheskaya teoriya smazki. Opory skol'zheniya. Smazka i smazochnyye materialy (Hydrodynamic Theory of Lubrication. Lubrication and Lubricant Materials) Moscow, Slip Bearings. Lubrication and Lubricant Materials) 3,800 copies Izd-vo AN SSSR, 1958. Errata slip inserted. 422 p. Trudy, v. 3)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Eds. for the Section "Hydrodynamic Theory of Lubrication and Slip Bearings": Ye. M. Gutman, Professor, Doctor of Technical Sciences, and A. K. D'yachkov, Professor, Doctor of Technical Sciences; Resp. Ed. for the Section, "Lubrication and Lubricant Materials": G. V. Vinogradov, Professor, Doctor of Chemical Sciences; Ed. of Publishing House: M. Ya. Klebanov; Tech. Ed.: D. M. Gus'kova.

PURPOSE: This collection of articles is intended for practicing engineers and research scientists.

COVERAGE: The collection, published by the Institut mashinovedeniya AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines) which was held April 9-15, 1958. Problems discussed were in Hydrodynamic Theory (Cont.) SOV/5055

S/081/62/000/007/022/033
B168/B101

AUTHOR: Firsanova, Ye. N.

TITLE: Present-day requirements with regard to the quality of engine oils

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 7, 1962, 547, abstract 7M175 (Sb. "Prisadki k maslam i toplivam". M., Gostoptekhizdat, 1961, 5-11)

TEXT: The requirements with regard to engine oils for carburetor and diesel engines were examined on the basis of results of engine and laboratory tests of a number of foreign and home-produced oils with additives. The starting-up of a number of tractor engines under winter conditions without pre-heating showed that the viscosity of the oil at the starting temperature must not exceed 4000-5000 est. In order to ensure that an engine will start up under winter conditions and that the wear will be small, it is recommended that oils with a viscosity of 7-8 est/100°C and a viscosity index of ~100 should be used. According to results of bench tests on a single-cylinder УИМ-НАТИ (UIM-NATI) diesel the oils ДС-11 (DS-11) (from

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sulfur-containing petroleums) + additive ТМСЯ-19 (PMSYa-19) DS-11 + additive НГ-102 (NG-102) and DS-11 + additive ВНИИ НП-360 (VNII NP-360) proved much better than oils with the additive ЦИАТИМ-339 (TsIATIM-339) and were equal to the foreign oils of series 1 and 2. Results of tests on a UIM-NAMI diesel engine agreed with those of tests conducted under bench and field conditions on Д-35 (D-35), Д-54 (D-54), and КДМ-46 (KDM-46) diesels. Relative evaluations of the oils with additives by ДК-2 (DK-2) laboratory methods (deposit), by their oxidisability according to the AZNII scale, by their thermo-oxidative stability in evaporators according to Papok's method and by the washing properties according to ПЗВ (PZV) in many cases diverged from the relative evaluations from tests on the UIM-NATI diesel engine. [Abstracter's note: Complete translation.]

FIRSANOVA, Ye.N.; ARABYAN, S.G.; OZHOGINA, M.M.

Effect of the alkalinity of oils with additives on engine wear. Khim. i tekh. topl. i masel 8 no.9:59-64 S '63. (MIRA 16:11)

1. Gosudarstvennyy soyuznyy nauchno-issledovatel'skiy traktornyy institut.

SOV/112-57-9-18301

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1957, Nr 9, p 22 (USSR)

AUTHOR: Firsayev, A. F.

TITLE: Use of X-Rays for Quality Control of Rubber-Insulated Cables (Primeneniye rentgenovskikh luchey dlya kontrolya kachestva kabeley s rezinovoy izolyatsiyey)

PERIODICAL: Inform.-tekhn. sb. M-vo elektrotekhn. prom-sti SSSR, 1956, Nr 10, pp 12-15

ABSTRACT: The "Elektroprovod" plant has adopted cable insulation roentgenoscopy as a part of processing and testing KVR-110 type x-ray outfit cable. The roentgenoscopic outfit comprises a control desk with a built-in 200/10,000-v transformer; regulating, starting, and measuring equipment; and a column with an x-ray tube. A draw-tube that can travel vertically and horizontally is placed under the x-ray tube. The cable being tested runs on rollers, inside the draw-tube, at a speed of 15-20 m/min. A viewing screen is fixed over the cable. A slot in the draw-tube lid permits observation. The outfit is controlled by a foot

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Use of X-Rays for Quality Control of Rubber-Insulated Cables

pedal. The cable is x-ray checked before application of its upper braiding. The above testing method allows detection of the exact location of such defects as air inclusions in insulation, core break, eccentricity or deformation of the internal braiding, etc. KVR-110 cable roentgenoscopy has obviated the intermediate high-voltage insulation testing that was practiced prior to application of the upper metal braiding. ("Elektroprovod" plant.)

L.A.O.

FIRSAYEVA, Ye.N.

Work of a night sanatorium. Zdrav. Ros. Feder. 5 no.5:7-9 My '61.
(MIRA 14:5)

1. Glavnyy vrach mediko-sanitarnoy chasti No.13, Moskva.
(MOSCOW—LABOR AND LABORING CLASSES—MEDICAL CARE)
(SANATORIUMS)

L 12263-63

S/271/63/000/004/006/045

44

AUTHOR: Aksenov, N. I. and Firsenkov, G. F.

TITLE: A nonlinear functional generator without use of bias voltage

PERIODICAL: Referativnyy zhurnal, Avtomatika, telemekhanika i vychislitel'naya tekhnika, no. 4, 1963, 12, abstract 4A72 (Tr. n.-i. in-ta teploenerg. priborostr; 1961, sb. 3, 3-12)

TEXT: The authors describe the operating principle and methodology of the circuit of a diode-functional generator (DFG) in a feed-back circuit. They examine the operation of the DFG, adduce the typical volt-ampere characteristic of germanium and silicon diodes and graphics for the emf of a Chromel-Kopel thermocouple. There is a description of the principle of a DFG circuit and a table of experimental and computed values. They recommend use of this circuit for correcting the nonlinear characteristic of pick-ups and as the decision element in continuous-action computers, where transformation with a high degree of accuracy is required. There are 7 illustrations and one table. P. M.

[Abstracter's note: Complete translation]

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FIRSENKO, P. P., Eng.

Excavating Machinery

Mechanizing the uprooting of tree stumps. Torf. prom. 30, No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

FIRSHTENBERG, Ya.Yu., inzh.

Mechanized calculation of material requirements for workpieces.
Mekh.i avtom.proizv. 17 no.9:20-22 S '63. (MIRA 16:10)

KRUPENKOV, Vladimir Ivanovich; FIRSHTENBERG, Yakov Yul'yevich; KRAINSKIY, A.S., red.

[Mechanizing consolidated accounting for the amount of materials used per unit of production in the Proletarskii Plant] Mekhanizatsiia svodnykh raschetov materialoemkosti izdelii na Proletarskom zavode. Leningrad, 1964. 14 p. (MIRA 18:4)

FIRSIKOV, V.R. (Kiyev)

Use of a novocaine alcohol solution in stomatological practice.
Probl.stom. 6:395-396 '62. (MIRA 16:3)
(STOMATOLOGY) (NOVOCAINE)

RUMANIA / Chemical Technology, Chemical Products and Their Application. Pharmaceuticals. Vitamins. Antibiotics. H-17

Abs Jour : Ref Zhur - Khimiya, No 5, 1959, No. 16511

Author : Firsirotu, Z.
Inst : Not given
Title : Incompatible Substances in Liquid Medications

Orig Pub : Farmacia (Romin), 1957, 5, No 4, 350-353

Abstract : Possible reactions that may occur among the ingredients of liquid medications are reviewed. The ingredients considered are: calcium bromide (5.0), potassium bromide (5.0), sodium nitrate (0.3), papaverine chlorhydrate (0.5), "korphiline" (0.75), syrup of chlorhydrate /Sic/ (50.0), and water (up to 300.0). Three alternate ways of making this preparation are presented. Undesirable reactions do not take place in either of the above three methods. -- E. Natkhan

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H-57

FIRSIROTU, Z.

FIRSHIROTU, Z. [Firsirotu, Z.], farmatsevt (Bukharest, Rumynskaya Narodnaya Respublika); KONIVER, L., doktor (Bukharest, Rumynskaya Narodnaya Respublika); VAHKOVICH, Kh., doktor (Bukharest, Rumynskaya Narodnaya Respublika); ROSSETI, M., farmatsevt

Study of the sterilizing action of silver ions. Apt.delo 9 no.2:86-90 Mr-Ap '60. (MIRA 13:6)

1. Iz laboratorii kontrolya medikamentov Nauchno-issledovatel'skogo farmatsevticheskogo instituta.
(SILVER--PHYSIOLOGICAL EFFECT)

FIRSOV, Aleksandr Aleksandrovich; ISKANDARYAN, A.A., red. izd-va; TSAGURIYA, G.M., tekhn. red.

[The Guinea Republic; the economy and foreign trade]Gvineiskaia Respublika; ekonomika i vneshnaia torgovlia. Moskva, Vneshtorgizdat, 1962. 58 p. (MIRA 16:1)
(Guinea--Economic geography) (Guinea--Commerce)

FIRSOV, Aleksandr Aleksandrovich; KAKHOVSKAYA, O.G., red.izd-va; PAVLOVSKIY, A.A., tekhn. red.

[The Republic of Guinea; its economy and foreign trade] Gvineiskaia Respublika; ekonomika i vneshniaia torgovlia. Moskva, Vneshtorgizdat, 1963. 46 p. (MIRA 16:11)
(Guinea--Economic conditions)
(Guinea--Commerce)

FIRSOV, Aleksandr Aleksandrovich; GORNUNG, M.B., otv. red.; USKOV, V.M., red.

[Economic problems of the Republic of Guinea] Ekonomicheskie problemy Gvineiskoi Respubliki. Moskva, Nauka, 1965. 189 p. (MIRA 18:7)

ANDROSOV, P.I., prof.; NEVSKIY, V.A.; FIRSOV, A.A.

Amount of the loss of blood in a stomach resection performed with the use of a mechanical suture. Vest. khir. 93 no.9:28-31 S '64. (MIRA 18:4)

1. Iz kliniki obshchey khirurgii (zav. - prof. P.I.Androsov) Moskovskogo meditsinskogo stomatologicheskogo instituta (rektor - dotsent G.N.Belstskiy) na baze Moskovskogo nauchno-issledovatel'skogo instituta skoroy pomoshchi imeni Sklifosovskogo.

ZHILIS, B.G.; FAYNBERUM, O.D.; FIRSOV, A.A.

Anesthesia in emergency surgery on senile persons. Trudy Inst. im. N.V. Sklif. 9:170-174 '63. (MIRA 18:6)

1. Moskovskiy gorodskoy nauchno-issledovatel'skiy institut skoroy pomoshchi imeni Sklifosovskogo.

FIRSOV, A.B.

28225

K tyeorii rassyeyaniya v polye shyetralbnoi simmyetrii Doklady akad. nauk SSSR, Novya syeriya, T. LXVlll, No. 2, 1949 s- 241-44. Z. Khmichyeskiye nauki

SO: LETOPIS NO. 34

FIRSOV, A.I.

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1844
AUTHOR VERESCAGIN.L.F., SEMERCAN,A.A., FIRSOV,A.I., GALAKTIONOV,V.A., FILLER,F.M.
TITLE Some Investigations on the Hydrodynamics of a Jet of Liquid ejected from a Nozzle under the Pressure of up to 1500 atm.
PERIODICAL Žurn.techn.fis, 26, fasc.11, 2570-2577 (1956)
Issued: 12 / 1956

By the work carried out in the laboratory for the physics of extremely high pressure of the USSR Academy of Science concerning the construction of compressors for extremely high pressures it was possible to develop a continuously operating machine which is able to eject water through a nozzle of from 0,2 to 0,8 mm diameter at pressures (prevailing before the nozzle) of up to 1500 atm. As such a pressure drop before and behind the nozzle requires great efficiency of the hydraulic compressor, it was necessary to build a machine that performed at least 1000 revolutions per minute and that was able at pressures of up to 2000 atm to produce one ton of water per hour.
The authors carried out their tests at pressures below 1500 atm in order to diminish the part played by the boundary layer introducing the jet of liquid. They used nozzles of at least 0,45 mm diameter; shape and surface of the nozzle exercise considerable influence on the disintegration of the jet of liquid. The most favorable shape of the nozzle is shown in form of a drawing. On this occasion it was not possible to use any of the existing methods for the direct measuring of the jet velocity, and it was necessary to use the BERNOULLI

Žurn.techn.fis,26, fasc.11, 2570-2577 (1956) CARD 2 / 2 PA - 1844

equation for this purpose. A diagram illustrates the dependence of jet velocity on the pressure prevailing in the receiver before the nozzle. The authors computed this dependence by using BRIDGMAN'S data for the compressibility of water. Up to pressures of from 3000 to 4000 atm the compressibility of water does not play an important part and the approximated formula $v = 14\ p$ may be used (p in kg/cm^2, v in m/sec). At such velocities REYNOLD'S numbers become very high (order of magnitude 10^5). They are mentioned in a table for a nozzle of 0,6 mm. The temperature of the jet increases with an increase of pressure and therefore also with an increase of velocity. Heating by friction and adiabatic cooling act in opposition to each other. Also a negative JOULE-THOMSON effect becomes noticeable. According to the opinion of the authors the experimentally attainable velocity of a jet of water ejected from a nozzle is limited only by the JOULE-THOMSON effect, for the temperature of the jet increases to such an extent at a certain pressure that the water evaporates. The authors found such an evaporation to take place on the occasion of an experiment carried out at 5000 atm, which fact may also be confirmed by rough calculation. The jet of water was investigated by means of a cinematographic camera producing 5000 pictures per sec, so that the general properties of the jet could be examined.

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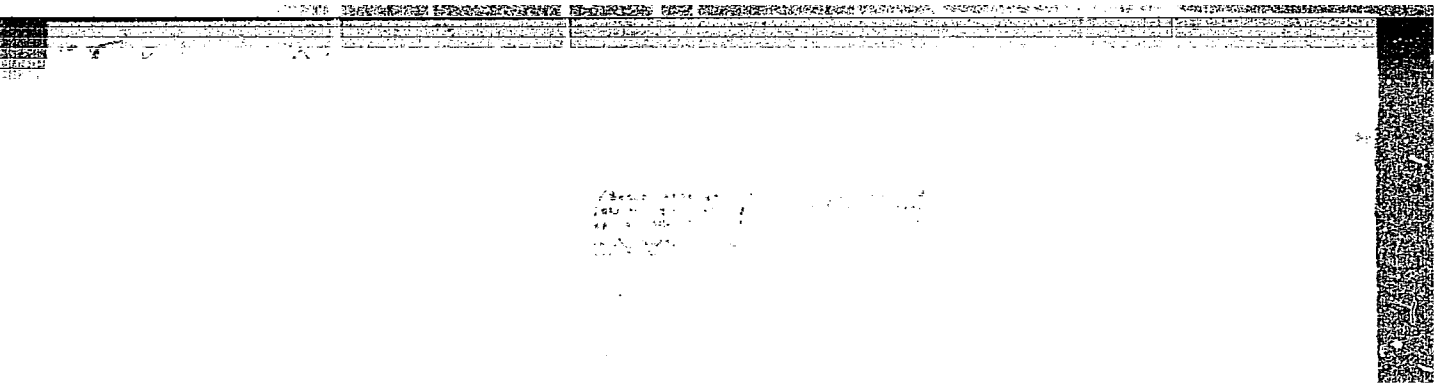

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