

IVANOV, I. G. B-III-1

BC

Efficiency of organo-mineral fertilizers. Z. V. LOVINOVA and A. G. IVANOV (Rep. Sci. Inst. Fert., Leningrad, 1953, 67-83).—Peat and brown coal, treated with gaseous NH_3 (I) and then with the H_2SO_4 extract from mineral phosphate (II), are more effective than is $(NH_4)_2SO_4$, Diammophos, or NH_4NO_3 . (II) is always better than (I). A. H.

ASM-51A METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PROCESSES AND PROPERTIES INDEX

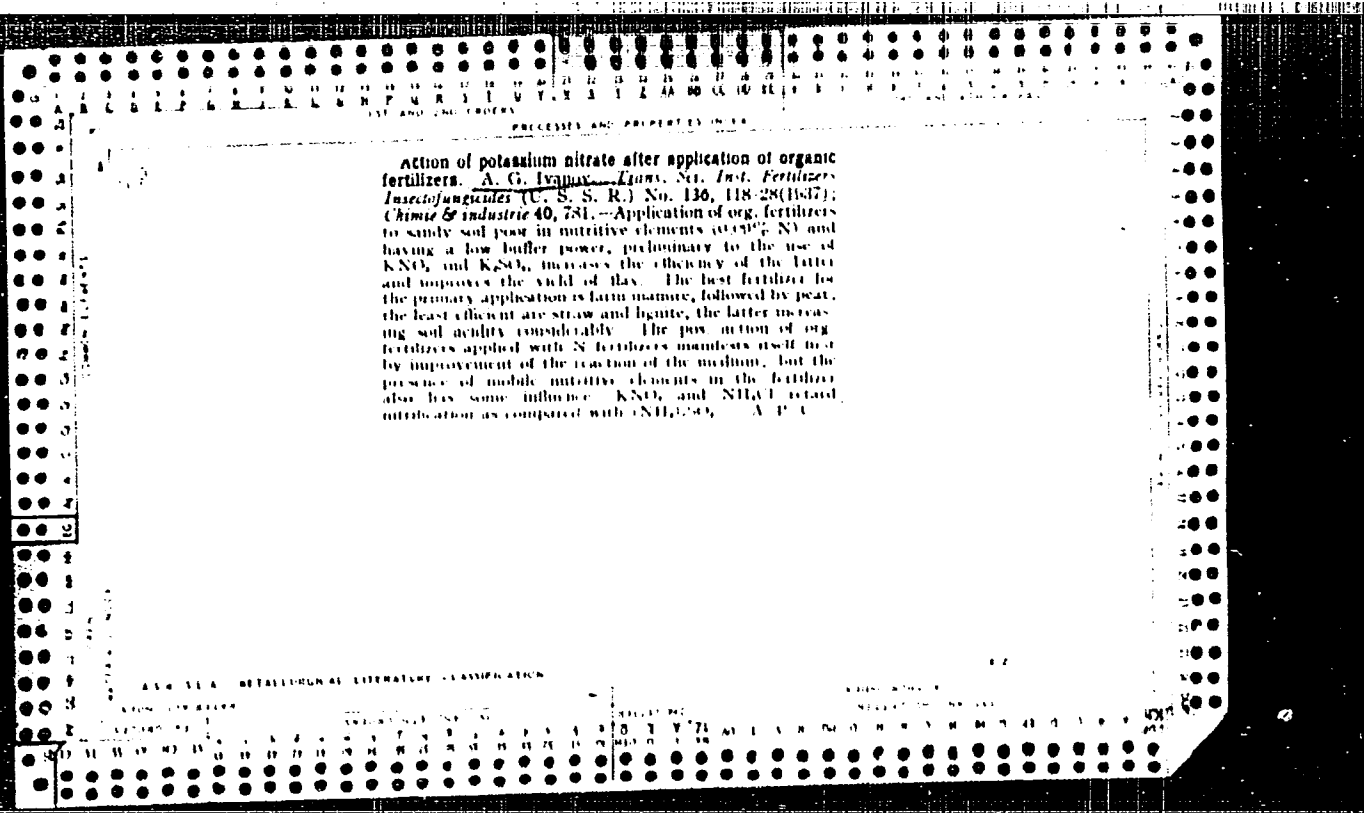
IVANOV, N. G.

13

The effectiveness of organomineral fertilizers. Z. V. Logvinova and A. G. Ivanov. *Repts. Sci. Inst. Fertilizers and Insecticides, Leningrad, 3rd Intern. Congr. Soil Sci., Oxford 1935, 87-83 (in German).*—"Ammonium humate" (I) was prepd. by treating peats with NH_3 , which caused increases in N from 0.8-2.0 to 2.5-0.3%. Ammoniacal N increased from 1.3-0.3% to 28-59% of the total N. "Humamophus" (II), pptd. from NH_4OH exts. of the same peats by a H_3PO_4 ext. of phosphate rock and ammoniated to neutrality, contained 8.4-14.1% H_2O and 6.0-10.0% N on the dry basis, of which 67-85% was in NH_3 , with 7.6-16.1% P_2O_5 . Pot expts. in which these in combination with KCl, etc., were compared with $(NH_4)_2SO_4$ and superphosphate for flax, hemp, barley and wheat indicated superior action of the humus prepn., the N so supplied equalling that of $(NH_4)_2HPO_4$ or NH_4NO_3 . The products made from low-ash peat were higher in N and more effective. Some kinds of raw lignite had favorable effects in similar expts., others were of neg. value, but without exception the ammoniated products therefrom, similar to I and II, were superior to inorg. N fertilizers, causing large increases in both yields and quality. The first crop of flax utilized 40-60% of wheat 76-100% of the ammoniacal N so supplied. Both I and II should be evaluated on the content of ammoniacal N; the P_2O_5 of II is not inferior to that of $(NH_4)_2HPO_4$. The org. colloids of these materials are of special value on sandy soils. Twenty-three references. C. J. S.

ASB-3LA METALLURGICAL LITERATURE CLASSIFICATION

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50



PROCESSED AND PROPERTY IN U.S.A.

Action of potassium nitrate after application of organic fertilizers. A. G. Ivanov. *Trudy Nauch. Inst. Fertilizers Insectofungicides* (U. S. S. R.) No. 130, 118-28(1947); *Chimie & Industrie* 40, 781. --Application of org. fertilizers to sandy soil poor in nutritive elements (0.50% N) and having a low buffer power, preliminary to the use of KNO₃ and K₂SO₄, increases the efficiency of the latter and improves the yield of flax. The best fertilizer for the primary application is farm manure, followed by peat, the least efficient are straw and lignite, the latter increasing soil acidity considerably. The pos. action of org. fertilizers applied with N fertilizers manifests itself not by improvement of the reaction of the medium, but the presence of mobile nutritive elements in the fertilizer also has some influence. KNO₃ and NH₄Cl retard nitrification as compared with (NH₄)₂SO₄. A. P. U.

IVANOV, A. G.

Ivanov, A. G. - "Liquid organic soil improvers", Trudy (Vsesnoyuz. nauch.-issled. in-t sveklovich. polevodstva), Issue 2, 1949, p. 153-200.

SO: U-4110, 17 July 53, (Letopis 'Zhurnal 'nykh Statey, No. 19, 1949).

BRUNSHTEYN, B.A.; IVANOV, A.G.; KLIMENKO, V.L.; TSYRKIN, Ye.B.

Distribution of expenditures for acetylene and ethylene in their simultaneous production. Nefteper. i neftekhim. no.4:28-30 '65. (MIRA 18:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov.

IVANOV, A.I. [Ivanov, O.I.]

Characteristics of the systematic composition of phytoplankton
in the northwestern part of the Black Sea. Nauk.zap.Ud.biolog.ista.
no. 5:51-54 '64. (MIRA 18:1)

IVANOV, A.I.

Effect of the mixing method of water-alcohol mixtures on alcohol losses. *Ferm. i spirt. prom.* 30 no.7:12-14 '64 (MIRA 18:2)

1. Sovet narodnogo khozyaystva Tsentral'nogo-Chernozemnogo ekonomicheskogo rayona.

IVANOV, A. I.; MOROKOV, V. D.; SHLYGIN, A. Ye.

Preliminary remarks on the age of Hercynian granitoid intrusions
in the northern and central Dzungaria. Metrol. opr. sbn. vozr.
geol. obr. no. 6:3-10 '64 (MIRA 18:2)

PHASE I BOOK EXPLOITATION

SOV/5162

Ivanov, Anatoliy Ivanovich, and Georgiy Iosifovich Rybkin

Porazhayushcheye deystviye yadernogo vzryva (Destructive Effect of a Nuclear Explosion) Moscow, Voenizdat M-va obor. SSSR, 1960. 382 p. No. of copies printed not given. (Series: Nauchno-populyarnaya biblioteka Voyennogo izdatel'stva)

Ed.: Ya.M. Kader; Tech. Ed.: Ye.N. Sleptsova.

PURPOSE: The book is intended for personnel of the Soviet Army and Navy, members of the All-Union Voluntary Society for the Promotion of the Army, Aviation, and Navy, as well as other individuals concerned with atomic warfare.

COVERAGE: The book describes the destructive factors of atomic weapons. It is based on non-Soviet materials. The authors also acquaint the reader with methods of protection against the damaging effects of atomic explosions. The book presents in simple detail the physical principles of the construction of nuclear and thermo-nuclear weapons, and considers the physical characteristics of the various destructive factors and the simplest methods for calculating the dimensions of the

Card 1/5

Destructive Effect of a Nuclear Explosion

80V/5162

zones of destruction. There are 24 references: 22 Soviet (including 6 translations from the English) and 2 English. In addition, there are 16 references mentioned in the text: 12 Soviet (including 2 translations from the English, 1 from French, and 1 from Japanese) and 4 English.

TABLE OF CONTENTS:

Introduction	3
Ch. I. Brief Physical Principles on the Construction of Atomic Weapons	
1. Structure of the atom and its nucleus	10
2. Reactions utilized in atomic weapons	10
3. Principles of organization of atomic charges	17
4. Principles of organization of thermonuclear charges	24
5. Methods for the military use of atomic weapons	37
6. Phenomena observed in an atomic explosion	44
	46
Ch. II. Shock Wave of an Atomic Explosion	
1. Production of an aerial shock wave during an explosion	57
	57

Card 2/5

IVANOV, A.I., inzh.

Concerning the defects of the VAF-85 device. Elek.sta. 34 no.2:87
F '63. (MIRA 16:4)

(Electric meters) (Electric measurements)

POLESHCHENKO, P.V.; CHERNOV, G.G.; IVANOV, A.I., kand. tekhn. nauk,
retsenzent; ZHURAVLEVA, M.N., red. izd-va; UVAROVA, A.F.,
tekhn. red.

[Tolerances and dimensional chains in agricultural machines]
Dopuski i razmerye tsepi v sel'skokhoziaistvennykh mashinakh;
spravochnoe posobie. Moskva, Mashgiz, 1963. 254 p.

(MIRA 16:6)

(Agricultural machinery--Desing and construction)

IVANOV, A. I.

KRISTALINSKIY, Vladimir Yakovlevich; IVANOV, A. I., redaktor ; AKHMEDOV,
V. M., redaktor izdatel'stva; KONYASHINA, A., tekhnicheskiy redaktor

[Fire prevention measures in the construction and use of buildings
on stock farms] Protivopozharnye meropriyatiya pri stroitel'stve i
ekspluatatsii zhivotnovodcheskikh pomeshchenii. Moskva, Izd-vo
M-va kommun. khoz. RSFSR, 1956. 63 p. (MLRA 10:5)
(Fire prevention) (Stock and stockbreeding)

9(2)

SOV/112-59-5-9931

Translation from: Referativnyy zhurnal. Elektrotehnika, 1959, Nr 5,
pp 214-215 (USSR)

AUTHOR: Ivanov, A. I.

TITLE: Device for Grinding Carbonyl Cups

PERIODICAL: Radiotekhn. proiz-vo, 1957, Nr 14, p 42

ABSTRACT: A device for grinding the central boss of a carbonyl cup is described; it is recommended that this device be used for adjusting inductance of carbonyl-cup coils. The device spindle is driven at 3,860 rpm by a 0.3-kw electric motor. The spindle upper part carries an abrasive disk. The spindle is placed in the center of a drum which is connected with a metal shell by means of a micrometer screw. The carbonyl cup is secured to the shell by a lever. A 16-division (one division is 1 mm) scale is provided on the shell for checking the grinding; the drum has a scale with 0.02-mm divisions. A fan and an oil filter prevent dusting during the grinding process. A functional diagram of the device is presented.

N. G. K.

Card 1/1

IVANOV, Anatoliy Ivanovich; SYRNEV, V.P., inzhener-mayor, kandidat
tekhnicheskikh nauk, redaktor; KADER, Ya.M., redaktor izdatel'stva;
SRIBNIS, N.V., tekhnicheskiiy redaktor

[Nuclear radiation of atomic explosions] Yadernye izlucheniia
atomnogo vzryva. Moskva, Voen. izd-vo Ministerstva obor. SSSR,
1956. 211 p. (MLRA 9:9)
(Radioactivity--Safety measures)
(Atomic bomb)

BOLYAYEV, Ivan Pavlovich, kand. tekhn. nauk, dotsent; IVANOV, Anatoliy
Andreyevich

Calculation of thermal processes in an electrical machine using
an electronic digital computer. Izv. vys. ucheb. zav.;
elektromekh. 6 no.9:1040-1049 '63. (MIRA 16:12)

1. Kafedra elektricheskikh mashin, apparatov, matematicheskikh
i schetnoreshayushchikh priborov i ustroystv Novocherkasskogo
politeknicheskogo instituta (for Bolyayev). 2. Starshiy
inzhener vychislitel'noy laboratorii Novocherkasskogo
politeknicheskogo instituta (for Ivanov).

IVANOV, Anatoliy Aleksandrovich, kand. tekhn. nauk; RADCHENKO,
L.A., kand. tekhn. nauk, retsenzent; NEMCHUNOVA, O.A.,
red. izd-va; MATUSEVICH, S.M., tekhn. red.

[Laboratory work on electric machinery and electrical
equipment of industrial enterprises] Laboratornye raboty
po elektricheskim mashinam i elektrooborudovaniyu pro-
myshlennykh predpriatii. Izd.2., perer. i dop. Kiev,
Gostekhizdat USSR, 1963. 514 p. (MIRA 17:1)

(Electric machinery)

(Electric apparatus and appliances)

IVANOV, Anatoliy Aleksandrovich, kand. tekhn.nauk, dots.; SUKACHEV,
A.P., kand. tekhn. nauk, retsenzent; LABINOVA, H.M., red.
izd-va; MONZHERAN, P.F., tekhn. red.

[Fundamentals of the theory of electrical and magnetic
circuits] Osnovy teorii elektricheskikh i magnitnykh tsepei.
Kiev, Izd-vo AN USSR, 1963. 366 p. (MIRA 16:12)
(Electric networks) (Magnetic circuits)

IVANOV, Anatolii Aleksandrovich; TULIN, V.S., doktor tekhn. nauk,
retsenzent; BLAZHKIK, A.T., doktor tekhn. nauk,
retsenzent

[Theory of automatic control and regulation] Teoriia avto-
matischeskogo upravleniia i regulirovaniia. Moskva, Izd-vo
"Nedra," 1964. 328 p. (MIRA 17:8)

FD-1533

USSR/Medicine - Education

Card 1/1 : Pub 102-4/14

Author : *Ivanov, A. I., Docent

Title : ~~Four years since introduction of a six-year period of training in~~
medical schools

Periodical : Sov. zdrav., 6, 22-25, Nov-Dec 1954

Abstract : Four years has now passed since a 6-year period of training was introduced in medical universities and some observations can now be made. It can be concluded that such an extended period of training of physician-specialists is indispensable. It is noticeable that those who have gone through a 6-year period of training are well equipped to assume their responsibility with self assurance and resolution. Changing conditions of training physicians require new methods of teaching. It is suggested, therefore, that the Main Administration of Educational Institutions of the Ministry of Health, USSR, pay greater attention to suggestions offered by those in charge of training in the medical universities.

Institution : (*Director) First Leningrad Medical Institute imeni Academician I. P. Pavlov

SMIRNOV, G.H.; SHUSTENKOVA, K.G.; IVANOV, A.I.

Pneumatic removal of dust and waste from bat wool carding machines. Tekst.prom. 20 no.8:52-54 Ag '60. (MIRA 13:9)

1. Sotrudniki Vsesoyuznogo nauchno-issledovatel'skogo instituta okhrany truda (for Smirnov, Shustenkova). 2. Master remontno-montazhnogo otdela Moskovskoy vatnoy fabriki imeni Sakko i Vantsetti (for Ivanov).

(Dust collectors) (Carding machines)

I V A N O V, A. I.

2*(1) PHASE I BOOK EXPLOITATION SOV/3150

Vserossiyskaya konferentsiya professorov i prepodavateley pedagogicheskikh institutov
 Primeneniye ultrazvukov k issledovaniyu veshchestv; trudy konferentsii, Vyp. 7 (Application of Ultrasonics for Analysis of Substances; Transactions of the All-Russian Conference of Professors and Teachers of Pedagogical Institutes, Nr 7) Moscow, Izd. MOPi, 1958. 283 p. 1,500 copies printed.

Tech. Ed.: S. F. Zhitov; Eds.: V. F. Kordrev, Professor, and B. B. Kudryavtsev.

PURPOSE: This book is intended for physicists, technicians, aeronautical engineers and other persons concerned with ultrasonics.

COVERAGE: The book contains twenty eight articles which treat ultrasonics phenomena in five general categories: 1) historical data on the development of ultrasonics in the Soviet Union over the past forty years; 2) the speed of sound in suspensions of various concentration and number and type of components and relationship between sound velocity and the compressibility of electrolytes; 3) ultrasonic investigations of physical and chemical properties of materials and the determination of physical and chemical constants, e. g. density of aqueous solutions, adsorption capability, solarity of solutions (with given temperature), viscosity, surface tension, saturation pressure and other ultrasonic investigation of the carbon content and geologic strata of coal; 4) industrial applications of ultrasonics, e.g. emulsification of reagents, cleansing of textile fibers and enhancing the susceptibility of some ultrasonic waves, etc.; and 5) apparatus which produce ultrasonic waves. No personalities are mentioned. REFERENCES accompany each article.

Yezhov, M. M. Application of Ultrasonic Methods for Measurement of the Depth of a Tempered Surface Layer	169
Yakovlev, V. P. and A. D. Ziper. Elementary Theory of a Quartz Converter	185
Kal'yanov, B. I. Measurement of the Coefficient of Absorption of Ultrasonic in the Critical Range of Methyl Acetate by the Pulse Method	201
Kal'yanov, B. I. Methodological Peculiarities of Investigating the Coefficient of Absorption of Substances in the Critical Range by the Pulse Method	207
Sobolev, V. D. The Application of a Telescopic Setup for Measurement of the Speed of Ultrasonic by the Optical Method	217
Boronov, Yu. M. and D. A. Starobinski. A New Design for the Measuring Chamber of a Photoelectric Apparatus	221
Makolov, V. S. and A. I. Ivanuk. A Demonstrator Pulse Generator with Ultrasonic Unitarity	225
Mel'nikova, A. S. Some Academic Experiments With the Application of Electroacoustic Apparatus	229
Kudryavtsev, B. B. The Propagation of Sound in Liquids	257
Malinskii, B. A. The Theory of Speed Dispersion and the Coefficient of Absorption of Ultrasonic in External Organic Acids	269
Abulov, K. S. The Theory of Phase Transitions With Two Curie Points	279

Card 6/7

NIKOLIN, A.V.; BELOV, A.P., kapitan-nastavnik; VARLAMOV, I.S., kapitan-nastavnik; KOSMACHEV, I.K., kapitan-nastavnik; SARATOV, V.F., kapitan-nastavnik; SEMONIN, M.I., kapitan-nastavnik; BEKMAN, A.A., kapitan; DRUZHININ, A.V., kapitan; IVANINA, B.F., kapitan; POLETAYEV, L.A., kapitan; VESHCHILOV, K.A.; VYKHODTSEV, P.K.; SMOLDYREV, A.Ye.; VERESHCHAGIN, Ya.A.; SUTYRIN, M.A.; SAVOSTIN, N.D.; FILYASOV, K.A.; GOLOVUSHKIN, M.P.; IVANOV, A.I.; FILYASOV, K.A., otv.za vypusk; ALEKSEYEV, V.I., red.Izd-va; YERMAKOVA, T.T., tekhn.red.

[Rules of navigation on R.S.F.S.R. inland waterways] Pravila plavanija po vnutrennim vodnym putiam RSFSR. Vvedeny v delatvie s 1 marta 1959 g. prikazom ministra rechnogo flota no.28 ot 11 fevralia 1959 g. Moskva, Izd-vo "Rechnoi transport," 1959. 124 p. (MIRA 13:6)

1. Russia (1917- R.S.F.S.R.) Ministerstvo rechnogo flota. 2. Glavnyy revizor po bezopasnosti sudokhodstva (for Nikolin). 3. Nachal'niki basseynovykh sudokhodnykh inspektsiy (for Veshchilov, Vykhodtsev, Smoldyrev). 4. Rabotniki Upravleniya glavnogo revizora po bezopasnosti sudokhodstva (for Vereshchagin, Sutyryn, Savostin, Filyasov). 5. Glavnoye upravleniye vodnykh putey i gidrotekhnicheskikh sooruzheniy (for Golovushkin).

(Inland navigation--Laws and regulations)

NIKOLIN, A.V., glav. revizor po bezopasnosti sudokhodstva, red.;
PIROZHKOVA, N.I., kapitan-nastavnik, red.; POLETAYEV,
L.A., kapitan-nastavnik, red.; KOZIN, N.A., kapitan,
red.; KUZNETSOV, B.Yu., kapitan, red.; TARASOV, A.G.,
kapitan, red.; VYKHODTSEV, P.K., red.; PERMYAKOV, V.V.,
red.; SIDOROV, F.G., red.; SOLOV'YEV, V.B., red.;
SHIRINKIN, A.D., red.; SHCHEPETOV, I.A., red.; SMIRNOV,
F.A., red.; KOSTIN, V.F., red.; SAVOSTIN, N.D., red.;
FILYASOV, K.A., red.; IVANOV, A.I., red.; LOBANOV, Ye.M.,
red.izd-va; REMNEVA, T.T., tekhn. red.

[Rules for the navigation on inland shipping routes of the
R.S.F.S.R.] Pravila plavaniia po vnutrennim sudokhodnym
putiam RSFSR. Vvedeny v deistvie s 15 marta 1963. g. pri-
kazom ministra rechnogo flota No.33 ot 28 fevralia 1963. g.
Moskva, Izd-vo "Rechnoi transport," 1963. 98 p.

(MIRA 16:6)

1. Russia (1917- R.S.F.S.R.) Ministerstvo rechnogo flota.
(Inland navigation--Laws and regulations)

IVANOV, A.I.; ARISTOV, V.I., red.; CHAPAYEVA, R.I., tekhn.red.

[Winged generation; reminiscence on aviators of three generations] Krylatoe plemia; vospominania o letchikakh trekh pokolenii. Moskva, Voenizdat, 1962. 147 p.

(MIRA 15:11)

(Air pilots—Correspondence, reminiscences, etc)

LEONOVICH, B.N.; ALEKSEYEV, Ye.Ye.; IVANOV, A.I.; KOTSYUBNYAK, A.V.;
KACHALKIN, A.P.; TUZHILKIN, A.P.; KUDRYAVSKIY, R.T., mashinist;
SHAPIRO, M.M.

Brief resumé of the speeches made at the conference of the
representatives of the collectives and shock workers of communist
labor engaged in the operation and maintenance of locomotives.
Elek. i tepl. tiaga 7 no.9:1-7 S '63. (MIRA 16:10)

1. Nachal'nik depo Grebenka Yuzhnoy dorogi (for Leonovich).
2. Nachal'nik depo kommunisticheskogo truda Moskva-Sortirovochnaya (for Alekseyev).
3. Nachal'nik depo kommunisticheskogo truda Liski Yugo-Vostochnoy dorogi (for Ivanov).
4. Obshchestvennyy mashinist-instruktor, sekretar' partiynogo byuro depo Mukachevo L'vovskoy dorogi (for Kotsyubnyak).
5. Zaveduyushchiy otdelom zarabotnoy platy i proizvodstvenno-massovoy raboty Tsentral'nogo komiteta professional'nogo soyuza rabochikh zheleznodorozhnogo transporta (for Kachalkin).
6. Master tsekha kommunisticheskogo truda po remontu toplivnoy apparatury depo Rtishchevo Privolzhskoy dorogi (for Tuzhilkin).
7. Depo Irkutsk-Sortirovochnyy Vostochno-Sibirskoy dorogi (for Kudryavskiy).
8. Starshiy master depo Tashkent Sredneaziatskoy dorogi (for Shapiro).

IVANOV, A.I.; KOVANEV, B.V.

The workers of the Liski Railroad Repair Shop have won the right for it to be called an enterprise of communist labor.
Elek. i tepl. tiaga no.5:8-11 My '63. (MIRA 16:8)

1. Nachal'nik depo Liski Yugo-Vostochnoy dorogi (for Ivanov).
2. Nachal'nik proizvodstvenno-tekhnicheskogo otdela depo Liski Yugo-Vostochnoy dorogi (for Kovanev).
(Liski—Railroads—Employees)
(Liski—Railroads—Repair shops)

IVANOV, A. I.

IRVIGATION

DECEASED

C. '62

1-1

deceased
IVANOV, A. I.

DECEASED

1963/3

GEOLOGY - *petroleum*

(c 1962)

~~SECRET~~

IVANOV, A.I.; MEZHENINOV, M.Yu.

Devices used for bending steel sheets in making hoist buckets.

Obm.tekh.opyt. [MLP] no.27:36-37 '56.

(MIRA 11:11)

(Sheet-metal work)

IVANOV, A. I., Cand Tech Sci -- "Calcination of ^{Knivoy Koz} ~~distorted~~
oxidized quartzites in a boiling bed." Dnepropetrovsk,
1961. (Min of Higher and Sec Spec Ed UkSSR. Dnepropetrovsk
Order of Labor Red Banner Metallur^{gical} Inst im I. V. Stalin)
(KL, 8-61, 243)

- 233 -

Ivanov, A. I., and Perlin, I. L.

"Determination of the Stress in the Elastic Part of the Deformation Zone in Wire Drawing", Sbornik Obrabotka Tsvetnykh Metallov i Splavov, Metallurgizdat, 1953.

IVANOV, A.I.; PERLIN, I.L.

Establishing the basic parameters of drawing steel-aluminum
bimetal wire. Sbor. nauch. trud. GINTSVETMET no.33:324-330
'60. (MIRA 15:3)
(Wire drawing) (Laminated metal)

RYS'YEV, A. V., prof.; IVANOV, starshiy prepodavatel'; BAUMAN, V. G.,
assistant; IVANOV, A. I., assistant; KOMAROV, B. I., assistant

Practice of a new organization of laboratory assignments. Izv.
vys. ucheb. zav.; gor. zhur. no.9:179-182 '61.
(MIRA 15:10)

1. Leningradskiy ordenov Lenina i Trudovogo Krasnogo Znameni
gornyy institut imeni G. V. Plekhanova.

(Electricity in mining--Study and teaching)

IVANOV, A.I.

Stratigraphic position and some characteristics of alkali-ultrabasic volcanic formations in the northern part of the Siberian Platform. Izv. vuz. ucheb. zav.; geol. i rasv. 6 no.4:56-65 Ap '63. (MIRA 16:6)

1. Leningradskiy gornyy institut im. G.V. Flekhanova.
(Siberian Platform—Ultrabasic)

SOROKIN, V.A., doktor tekhn.nauk prof.; IVANOV, A.I., inzh.

Magnetized roasting of Krivoy Rog quartzites in a fluidized
bed. Izv.vys.ucheb.zav.; chern.met. 2 no.10:17-21 O '59.
(MIRA 13:3)

1. Donetskii industrial'nyy institut. Rekomendovano kafedroy
metallurgii chuguna Donetskogo industrial'nogo instituta.
(Krivoy Rog--Quartzite) (Fluidization)

BRAYNIN, I.Ya., prof.; IVANOV, A.I., inzh.

Scientific and technical conference in the metallurgical department of the Donets Industrial Institute. Izv.vys.ucheb.zav.; chern. met. no.5:149-152 My '59. (MIRA 12:9)

1. Donetskiy industrial'nyy institut.
(Metallurgical research)

SOROKIN, V.A., doktor tekhn. nauk; IVANOV, A.I., kand. tekhn. nauk;
ROGACH, A.P.

Preparation of manganese coke and its use in making con-
verter cast iron. Met. i gornorud. prom. no.4:32-33
Jl-Ag '63. (MIRA 16:11)

1. Donetskiy politekhnicheskiiy institut.

IVANOV, A.I.

Waiting coal in the block in the mines of Rutchenkovugol' trust.
Ugol' Ukr. 5 no.5:37-39 My '61. (MIRA 14:5)

1. Glavnyy inzh.tresta Rutchenkovugol'.
(Donets Basin--Coal mines and mining)

IVANOV, A. I.

These shortcomings can be easily eliminated. Elek.i tepl.
tiaga 3 no.8:20 Ag '59. (MIRA 12:12)

1. Mashinist-instruktor depo Tayga, Tomskaya doroga.
(Electric locomotives)

IVANOV, Aleksandr Ivanovich; UGOLEV, B.N., kand. tekhn. nauk, red.;
LEBEDEVA, I.D., red. izd-va; KARLOVA, G.P., tekhn. red.

[Machines and apparatus for the mechanical testing of wood
and wooden materials] Mashiny i pribory dlia mekhanicheskikh
ispytaniy drevesiny i drevesnykh materialov. Moskva, Gos-
lesbumizdat, 1962. 108 p. (MIRA 16:3)
(Wood--Testing)

IVANOV, A.I., inzh.; KOVANEV, B.V., inzh.

Over-all mechanization in the repair of diesel locomotives.
Zhel. dor. transp. 45 no.6:73-76 Ja '63. (MIRA 16:7)

1. Nachal'nik lokomotivnogo depo Liski Yugo-Vostochnoy dorogi (for Ivanov).
2. Nachal'nik proizvodstvenno-tekhnicheskogo otдела depo Liski Yugo-Vostochnoy dorogi (for Kovanev).
(Diesel locomotives--Maintenance and repair)

IVANOV, A.I.

Equipment maintenance and repair service is an important part of production. Bum. prom. 38 no.10:12 0 '63.

(MIRA 16:11)

1. Nachal'nik remontno-mekhanicheskogo zavoda Kotlasskogo sul'fitno-tsellyuloznogo kombinata.

ADAMOV, V.Ye.; BAKLANOV, G.I., prof.; IVANOV, A.I.; SAMOYLOVA, A.A.;
USTINOV, A.N.; SHIFMAN, A.G.; SHCHEDRIN, N.I.; CHIZHEVSKAYA,
K.M., red.

[Collecting of problems on industrial statistics] Sbornik za-
dach po statistike promyshlennosti. Moskva, Izd-vo "Statistika,"
1964. 247 p. (MIRA 17:5)

IVANOV, A.I.

Accumulation of the root mass by alfalfa species and varieties.
Sbor. trud. asp. i mol. nauch. sotr. VIR no.5:147-153 '64.
(MIRA 18:3)

IVANOV, A.I.

Survival of *Rapana thomasiana* Grosse larvae in water of various salinity. Dokl. AN SSSR 161 no.3:694-696 Mr '65.

(MIRA 18:4)

1. Submitted June 20, 1964.

BAKLANOV, Gleb Ivanovich, prof.; IVANOV, Aleksandr Ivanovich,
dots.; USTINOV, A.N., dots.; SHIFMAN, A.G., dots.;
NOVIKOVA, S.N., red.

[Industrial statistics] Statistika promyshlennosti. Mo-
skva, Statistika, 1965. 358 p. (MIRA 18:6)

IVANOV, A. I.

Geography & Geology

Requirements of industry as to the quality of mineral raw materials. Handbook for geologist--Moskva, Gos. izd-vo geologicheskoi lit-ry Komiteta po delam geologii pri SNK SSSR, No. 6, Chalk, 1946.

Monthly List of Russian Accessions, Library of Congress, October 1952, UNCLASSIFIED

1. IVANOV, A. I.
2. USSR (600)
4. Chalk
7. Comparative characteristics of chinks of the Soviet Union in view of their use in various branches of industry. [Abstract.] Izv. Glav. upr. geol. Razn., No. 2, 1947.

9. Monthly list of Russian Accessions. Library of Congress. March, 1953. Unclassified

IVANOV, A. I.

32371 IVANOV, A. I. Oboenovaniye Svodnogo Stratigraficheskogo Razreza Drevnikh Svit Zapadnogo Sklona Yuzhnogo Lirala. Byulleten' Mosk. o-vo Ispytateley Prirody, Otd. Geol., 1949, vyp. 5, s. 31-42---Bibliogr: 7, MA2V.

SO: Letopis' Zhurnal'nykh Statey. Vol. 44

IVANOV, A.I.

Basis of a consolidated stratigraphic cross section of ancient
series in the western slope of the southern Urals. *Biul. MOIP, Otd.*
geol. 24 no.5:31-42 '49. (MIRA 11:5)

(Ural Mountains--Geology, Stratigraphic)

5(8)
AUTHORS:

Shcherba, G. N., Ivanov, A. I.

SOV/7-58-6-13/16

TITLE:

Discussion (Diskussiya) -- On the Age of Some Granite Intrusions in Central Kazakhstan Bearing Rare Metals (Po povodu vozrasta nekotorykh redkometal'nykh granitnykh intruziy Tsentra' 'nogo Kazakhstana)

PERIODICAL:

Geokhimiya, 1958, Nr 6, pp 607 - 609 (USSR)

ABSTRACT:

L. V. Komlev, S. I. Danilevich, K. S. Ivanova and collaborators believe the intrusions of Akchatau, Maytas and Zhanet to have Postcaledonian but not Posthercynian age (Refs 1 and 2). The authors investigated these regions and carried out additional age determinations for Akchatau and Zhanet. The assumptions of L. V. Komlev and others are in contradiction to the geological conditions. In their investigations Komlev and his collaborators used age determinations according to the helium, lead and argon method which resulted in an average of 300 - 317 million years. A. I. Ivanov and N. I. Zamyatin on the other hand found in the Laboratoriya IGN AN Kaz.SSR according to the argon method 240 - 248 million years. Komlev's determination for Zhanet was 320 million years, the authors, however, find 207-243

Card 1/2

Discussion - On the Age of Some Granite Intrusions SCV/7-58-6-13/16
in Central Kazakhstan Bearing Rare Metals

million years (Table 2). The sequence in the region of Zhanet was investigated in detail by R. N. Mal'kova, V. P. Murav'yeva, V. L. Mel'nikova. There are 2 tables and 9 references, which are Soviet.

SUBMITTED: May 20, 1958

Card 2/2

IVANOV, A.I.

New data on the stratigraphy of Permian-Triassic effusive formations
in the Taymyr Peninsula. Trudy NIIGA 67:36-47 '58.

(MIRA 12:10)

(Taymyr Peninsula--Geology, Stratigraphic)

IVANOV, A. I.; MIASHEVA, G. V.

Stratigraphic position and correlation of the Kindyn
series in the lower part of the Kotuy basin. Sbor.st.
po paleont. i biostrat. no. 16:5-11 '59. (MIRA 13:3)
(Kotuy Valley--Geology, Stratigraphic)

IVANOV, A.I.; SAFRONOV, V.P.

Contact-metasomatic changes in gabbro-dolerites, melilite rocks,
and iolite-melteigites of the Nemakit massif (right bank of the
Kotuya River). Trudy NIIGA 65:133-143 '59. (MIRA 13:12)
(Kotuy Valley--Metasomatism)

GOR, Yu.G.; IVANOV, A.I.

Early phases in the trap and alkali-ultrabasic volcanism in the
northern Siberian Platform. Trudy NIIGA 105:116-125 '59.

(MIRA 13:5)

(Siberian Platform-Rocks, Igneous)

SCV/20-127-5-40/58

3(5)

AUTHORS: Ivanov, A. I., Pirozhnikov, L. P.

TITLE: The Age of the Alkaline Ultrabasic Volcanogenic Formations of the North of the Siberian Platform

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 5, pp 1078 - 1080 (USSR)

ABSTRACT: The formations mentioned in the title were found by A. I. Ivanov in 1956 in the upper course of the Kotuy river. They are developed in various parts of the terrigenous-volcanogenic Permian Triassic complex. This complex consists of 3 series: (from below to the top) a) Kotuyskaya (190 m thick) b) Potokoyskaya (170 m), c) and Ary-Dzhangskaya (250 m). The oldest of the mentioned formations are tuffs (maximum thickness 5 m) which are stratified at the base of floristically characterized coal-bearing Lower Permian deposits of the Kotuyskaya series (Ref 1). These series have been investigated several times. N. A. Shvedov determined the remains of the flora; Ya. I. Pol'kin and A. A. Lyuber (Ref 4) and A. F. Dibner (Ref 5) investigated the spore-pollen complexes; L. P. Pirozhnikov the phyllopora found by A. I. Ivanov and G. V. Milasheva in 1958. In the North of the occurrence

Card 1/2

The Age of the Alkaline Ultrabasic Volcanogenic
Formations of the North of the Siberian Platform

SCV/20-127-5-40/58

of alkaline ultrabasic lavas of the Ary-Dzhangskaya series the authors observed alternation beds of alkaline basaltoids and basalt tuffs. This confirms the assumption by Ye. L. Butakova and Ya. I. Pol'kin (Ref 5) that the mentioned formations of the Ary-Dzhangskaya and Kayalakhskaya series are synchronous. Within the Ary-Dzhangskaya series pillow-like lavas of melilite-picrite-porphyrites of a thickness of 20 m are stratified on a tuff unit. They are new, hitherto not described rocks. The phyllopora found characterize the age of the alkaline ultrabasic effusive rocks of the series mentioned last as Lower Triassic. Thus, the formation of the alkaline ultrabasic rocks in the North of the Siberian platform took place at the beginning of Lower Permian, towards the end of Upper Permian, and in Lower Triassic. There are 5 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut geologii Arktiki (Scientific Research Institute of the Geology of the Arctic)

PRESENTED: April 20, 1959, by D. V. Nalivkin, Academician

SUBMITTED: April 9, 1959

Card 2/2

IVANOV, A.I.

Determining the absolute age of geological formations. Vest.
AN Kazakh.SSR 16 no.12:79-80 D '60. (MIRA 14:1)
(Geological time)

SOROKIN, V.A., doktor tekhn.nauk; KARMAZIN, V.I., doktor tekhn.nauk;
KATSEN, L.G., kand.tekhn.nauk; IVANOV, A.I., inzh.; OSTAPENKO,
P.Ye., inzh.

Magnetized roasting of Krivoy Rog quartzites in a fluidized bed.
Stal' 20 no. 12:1057-1060 D '60. (MIRA 13:12)

1. Mekhanobrchermet.
(Krivoy Rog--Quartzite) (Fluidization)

IVANOV, A.I.

Development and nature of alkali and ultrabasic volcanism in
the northern Siberian Platform. Trudy NIIGA 114:147-158 '60.
(MIRA 13:11)
(Siberian Platform--Volcanoes)

ZAMYATIN, N.I.; IVANOV, A.I.; MONICH, V.K.; NURLYBAYEV, A.N.

Absolute age of the alkali rocks of the Ishim complex. Izv.
AN Kazakh. SSR. Ser. geol. no.1:15-20 '61. (MIRA 14:6)
(Ishim Valley--Rocks, Igneous)

IVANOV, A.I.; MONICH, V.K.; ZAMYATIN, N.I.

Absolute age of the granitoid intrusions in the southern part
of central Kazakhstan. *Biul.Kom.po opr.abs.vozr.geol.form.*
no.4:30-47 '61. (MIRA 15:1)

(Kazakhstan--Rocks, Igneous)
(Geological time)

ABDRAKHMANOV, K. A.; IVANOV, A. I.; MONICH, V. K.; MOROKOV, V. D.

Absolute age of alkali rocks in the northwestern part of the
Talas-Ala-Tau. Izv. AN Kazakh.SSR. Ser. geol. no. 4: 89-91 '61.

(Mira 15:3)

SHCHERBA, G.N.; YERSHOV, B.V.; IVANOV, A.I.; KUDRYASHOV, A.V.;
SERCHILO, N.P.

Possible Mesozoic age of the Khorgos intrusive complex in the
Dzungarian Ala-Tau. Trudy Inst.geol.nauk AN Kazakh.SSR 6:226-236
'62. (MIRA 16:6)

(Dzungarian Ala-Tau--Geological time)

MONICH, V.K.; PEKARSKAYA, T.B.; SEMENOVA, T.P.; IVANOV, A.I.

Eleventh session of the Commission on the Determination of the
Absolute Age of Geological Formations attached to the Department
of Geological and Geographical Sciences of the Academy of Sciences
of the U.S.S.R. Izv. AN SSSR. Ser.geol. 28 no.6:129-133 Je
'63. (MIRA 16:8)

(Geological time)

RUMYANTSEV, P.K.; RYZHKOV, M.S.; ALEKSEYEV, P.A.; IVANOV, A.I.;
TAGAN, I.L., elektromekhanik; LYUBIN, A.P.

Discussion of the article "Pedal or track circuit." Avtom.,
telem. i svyaz' 9 no.10:38-39 0 '65. (MIRA 18:11)

1. Starshiy elektromekhanik Velikolukskoy distantsii Oktyabr'skoy dorogi (for Rumyantsev).
2. Starshiy elektromekhanik Mikun'skoy distantsii Severnoy dorogi (for Ryzhkov).
3. Zamestitel' nachal'nika Nyandomskoy distantsii Severnoy dorogi (for Alekseyev).
4. Glavnyy inzh. Nyandomskoy distantsii Severnoy dorogi (for Ivanov).
5. Krasnolimanskaya distantsiya Donetskoy dorogi (for Tagan).
6. Glavnyy inzh. Kishinevskoy distantsii signalizatsii i svyazi Odessko-Kishinevskoy dorogi (for Lyubin).

L 29808-66 EWP(e)/EWT(m)/EWP(t)/ETI IJP(c) JD/WH

ACC NR: AF6020872

SOURCE CODE: UR/0383/66/000/001/0043/0046

AUTHOR: Donisov, S. I.; Ivanov, A. I.; Lekalova, L. I.

37

B

ORG: none

TITLE: Industrial production of electrothermal silumin 4SOURCE: Metallurgicheskaya i gornorudnaya promyshlennost', no. 1, 1966, 43-46

TOPIC TAGS: aluminum alloy, silicon alloy, metal extraction, metal melting, kaolin, annealing

ABSTRACT: The electrothermal method for production of silumin developed by the All-Union Aluminum and Magnesium Institute is preferable to the conventional technique of producing this alloy by melting pure aluminum¹ and silicon². The introduction of this method into industry will reduce the capital outlay (by 25-30%) and net cost of silumin production (by 4-5% for low capacity plants and by 30-40% for large enterprises). The electrothermal method for Silumin production is effective even when less than 20% aluminum from the initial kaolin is used. Experiments were conducted to find optimum conditions for enrichment of kaolins to produce alloys without using alumina. The kaolins³ used in the study had the following chemical composition in %: Al₂O₃--39.62; SiO₂--44.42; Fe₂O₃--1.6; TiO₂--0.9; (CaO+MgO)--0.2; P₂O₅--0.08; calcination loss--12.98. A batch of kaolin with an Al₂O₃: SiO₂ ratio of 0.892 was roasted.

Card 1/2

UDC: 669.713.6

L 29808-66

ACC NR: AP6020872

at various temperatures and then leached in a 200 g/l solution of alkali in Na_2O at a temperature of 90-95°C for one half hour. Curves are given showing the extraction of silica and alumina into solution as a function of roasting temperature. The extraction of silica into the solution increases sharply with temperature reaching a maximum of 73-77% at 900-1000°C. Roasting of kaolin at higher temperatures retards the transition of silica of the soluble phase. Extraction drops to 32% at 1300°C due to the formation of mullite which dissolves poorly in alkali solutions. Curves are also given showing the extraction of silica and alumina into solution as a function of annealing time. An increase in the annealing time past one-half hour has little effect on the silica extraction. Extraction shows a maximum at 150-200 g/l Na_2O . The experimental data are used as a basis for setting up a system for optimum production of electrothermal silumin without using alumina. Orig. art. has: 5 figures and 1 table. [JPRS]

SUB CODE: 11, 13 / SUBM DATE: none / ORIG REF: 002

Card 2/2 *fl*

PA 247T4

IVANOV, A. I.

USSR/Metallurgy - Magnesium

21 Sep 52

"Phase Diagram for the System $KCl-MgCl_2-CaCl_2$," A. I. Ivanov, All-Union Aluminum-Magnesium Inst

DAN SSSR, Vol 86, No 3, pp 539-542

This report is on one of a series of investigations done at the All-Union Aluminum-Magnesium Inst to det the optimum compn of electrolyte for the production of metallic Mg. Thermal analysis, microstructure, and X-ray analysis were used to det the phase diagram of $KCl-MgCl_2-CaCl_2$ for the temp range of 800-380°. Presented by Acad G. G. Urazov 19 Jul 52.

247T4

Ivanov, A.I.

SUSHKOV, Akim Ivanovich; TROITSKIY, Ivan Alekseyevich; BYDENZON, Moisey Aronovich; KHODAK, L.P., kand.tekhn.nauk, red.; IVANOV, A.I., inzh. red.; REMPEL', S.I., prof. doktor tekhn.nauk, red.; LUCHKO, Yu.V., red.izd-va; ZEF, Ye.M., tekhn.red.

[Metallurgy of light metals] Metallurgiya legkikh metallov.
Sverdlovsk, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, Sverdlovskoe otd-nie, 1957. 510 p. (MIRA 11:2)
(Light metals--Metallurgy)

SOV/137-58-11-22218

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 54 (USSR)

AUTHORS: Strelets, Kh. L., Vasil'yev, Z. V., Gus'kov, V. M., Ivanov, A. I.,
Moiseyev, A. A., Farengol'ts, V. M.

TITLE: Development of an Electrolytic Method of Magnesium Recovery
(Razrabotka elektroliticheskogo sposoba polucheniya magniya)

PERIODICAL: V sb.: Legkiye metally. Nr 4. Leningrad, 1957, pp 87-92

ABSTRACT: The history of the creation of Mg production in the USSR. The major efforts of the research and planning institutions and plants were directed toward improving the designs of the cells and speeding the Mg electrolysis process. In recent years, five-anode cells of both top and side anode-insertion designs, operating at 60,000 amps, have been placed in operation. The working height of the anode has been increased from 80 to 100 cm. When the distance between poles is 8 cm, this does not result in any significant reduction in the current efficiency of Mg. These electrolysis procedures require 15 kwh/kg Mg when Mg chloride is subjected to electrolysis in a bath of optimal composition.

Card 1/1

I. G.

SOV/137-58-9-18798

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 92 (USSR)

AUTHORS: Strelets, Kh.L., Voynitskiy, A.I., Ivanov, A.I., Petrov, V.I.,
Sergeyev, V.V., Forsblom, G.V.

TITLE: Studies in the Metallurgy of Titanium (Raboty v oblasti metal-
lurgii titana)

PERIODICAL: V sb.: Legkiye metally. Nr 4. Leningrad, 1957, pp 114-120

ABSTRACT: A review of studies of titanium metallurgy in the USSR com-
prising the production of anhydrous $TiCl_4$, the development of
processes and equipment for reduction of $TiCl_4$ by Mg and Na,
the purification of Ti sponge, the electrolysis of Ti and TiO_2
chlorides, the electrolytic refining of Ti, etc. The studies and
investigations performed have made it possible to organize
large-scale industrial extraction of Ti in the USSR.

Ye.Z.

1. Metallurgy--USSR 2. Titanium--Study and teaching

Card 1/1

137-58-6-11495

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 34 (USSR)

AUTHORS: Gus'kov, V.M., Ivanov, A.I., Pashkevich, L.A.

TITLE: Fusibility Diagram of Three Cross Sections of the Quaternary System NaF-AlF₃-CaF₂-BaF₂ (Diagramma plavkosti trekh razrezov chetvernoy sistemy NaF-AlF₃-CaF₂-BaF₂)

PERIODICAL: Tr. Vses. alyumin.-magn. in-ta, 1957, Nr 39, pp 251-273

ABSTRACT: To determine the optimum composition of an NaF-AlF₃-CaF₂-BaF₂ bath for Al refining, a study was conducted of the fusibility of this quaternary system within the limits of the concentrations of the components needed to obtain high-purity Al. Methods of thermal, and in part, crystal optic analysis, are used to study 3 incomplete primary sections with the following constant BaF₂ contents: 22, 27, and 32 weight %. 28 secondary sections are plotted and 3 two-dimensional diagrams of primary sections of equal concentration, with isotherms of primary crystallization at 25°C intervals. The two-dimensional diagrams showed the presence of four fields of primary crystallization and a region adjacent to the AlF₃ corner for a mixture the fusion of which could not be carried to

Card 1/2

137-58-6-11495

Fusibility Diagram of Three (cont.)

completion because of the high volatility of AlF_3 , i.e., an unrealizable fifth region. The immersion method of crystal optics established the substances of primary crystallization for 3 fields out of 4 and a tentative mineralogical phase composition for each of the fields. The presence of melts with temperatures of primary crystallization 100-120° lower than the temperature of fusion of the electrolyte tested in the production of high-purity Al is established.

N.P.

1. Halogen fluorides--Effectiveness
2. Halogen fluorides--Analysis
3. Aluminum--Processing

Card 2/2

137-58-4-6937

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 88 (USSR)

AUTHORS: Ivanov, A. I., Tigane, V.G., Gopiyenko, V.G.

TITLE: Experiences in Pilot-plant Production of Recrystallized Silicon Carbide (Opyt polupromyshlennogo polucheniya rekristallizovannogo karbida kremniya)

PERIODICAL: Tr. Vses. alyumin. -magn. in-ta, 1957, Nr 39, pp 368-386

ABSTRACT: A procedure for making items of recrystallized SiC for employment in equipment for the aluminum and magnesium industry is developed on a pilot-plant scale. The technical feasibility of shaping objects of various sizes from SiC by pneumatic ramming is demonstrated. It is established that prior oxidizing roasting impairs the quality of the products (there is a rise in SiO₂ content, a loss of strength, and an increase in porosity). A temperature study of graphiting furnaces was conducted in which temperature zones for recrystallization of SiC items as a by-product of the graphiting of coal products were found. The physical and mechanical properties and the resistance of the products to chemicals were studied under laboratory conditions. Ideas on the mechanism of the process of SiC crystallization

Card 1/2

137-58-4-6937

Experiences in Pilot-plant Production of Recrystallized Silicon Carbide
are adduced on the basis of the findings of X-ray structural analysis.

1. Silicon carbide--Crystallization
 2. Silicon carbide--Production
 3. Silicon carbide--Processes
- I. B.

Card 2/2

137-58-6-12001

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 116 (USSR)

AUTHOR: Ivanov, A.I., Gopiyenko, V.G.

TITLE: Certain Physico-chemical Characteristics of Materials and Processes of Electrolytic Production of Titanium (Nekotoryye fiziko-khimicheskiye kharakteristiki materialov i protsessov elektroliticheskogo proizvodstva titana)

PERIODICAL: Tr. Vses. n.-i. alyumin.-magn. in-ta, 1957, Nr 40, pp 365-379

ABSTRACT: As a result of an investigation the following was established:
1) At a temperature of 700-800°C the solubility of $TiCl_4$ in fused chlorous compounds of alkali metals and alkali earth metals constitutes 0.5-4.0% after a 30 min saturation period and 1-5% after a saturation period of 1.5 hours. The greatest solubility is observed in the mixture $4KCl+1MgCl_2$, in the eutectic mixture of KCl $LiCl$, and in KCl . The solubility of $TiCl_4$ in salts containing fluoride may be raised into the range of tens of percent, a fact which is explained by the interaction of $TiCl_4$ with fluorine salts and by the formation of free and complex compounds of Ti . 2) At temperatures between 600 and

Card 1/3

137-58-6-12001

Certain Physico-chemical Characteristics of Materials and Processes (cont.)

800° the solubility of TiO_2 in fused chlorides of alkali metals is close to zero, while in chlorides of Ba, Ca, and Al it does not exceed 0.5%. More than 3% of TiO_2 dissolve in fused fluorides (KF , NaF , $KF+NaF$, Na_3AlF_6 , and K_2TiF_6) at temperatures of 850-950°. A mixture of fluortitanate with chlorides is found to be an effective solvent of TiO_2 at a temperature of 700-800°. 3) The employment of the vacuum separation system is inexpedient when processing cathodic precipitates containing considerable quantities of fluoride salts. 4) Microscopic inspection, sketching and photography, sedimentometric analysis, measurement of the specific surface and specific gravity, and structural X-ray analysis, all these may be employed in the evaluation of the quality of powdered Ti obtained electrolytically. The method of measuring the electric resistivity of the Ti powder is not suitable for the evaluation of the quality of the metal. 5) Alloyed steels 1Kh18N9T, EI432, and others, as well as Ni, brass, Mo, and other metals may be recommended for work in an atmosphere of $TiCl_4$ vapors at temperatures not exceeding 136°. No metals have been found that are sufficiently stable to be employed in an atmosphere of $TiCl_4$ in the range of temperatures from 300° to 800°. "Ftorplast-4" exhibits extreme chemical stability in $TiCl_4$ vapors at temperatures up to 200°. Good stability in $TiCl_4$ vapors at temperatures of 700-800° was also exhibited by fireclay, magnesite, talcomagnesite, Card 2/3

137-58-6-12001

Certain Physico-chemical Characteristics of Materials and Processes (cont.)

quartz, porcelain, sintered corundum, forestite, and graphite. Carbides of Si and Ti disintegrate rapidly under such conditions.

M.M.

1. Titanium--Electrolysis
2. Titanium chlorides--Solubility
3. Titanium dioxides--Solubility
4. Metal chlorides--Solvent action
5. Fluorides--Solvent action
6. Titanium chloride vapors--Properties

Card 3/3

137-58-6-11999

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 115 (USSR)

AUTHORS: Ivanov, A.I., Maurits, I.I., Gopiyenko, V.G.

TITLE: Electrolysis of Chlorides of Titanium in Melts With a Liquid Cathode (Elektroliz khloridov titana v rasplavakh s zhidkim katodom)

PERIODICAL: Tr. Vses. n.-i. alyumin.-magn. in-ta, 1957, Nr 40, pp 380-387

ABSTRACT: It has been established that by means of electrolysis of $TiCl_3$ and $TiCl_4$ it is possible to obtain metallic Ti in the form of sponge or powder on the surface of a liquid cathode. Best results were obtained by employing a Zn + Mg alloy (60-70% Zn) as the cathode and by utilizing electrolytes having the following composition (in %):

40% KCl + 40% NaCl + 20% $MgCl_2$ and 44% NaCl + 36% $CaCl_2$ + 20% $BaCl_2$;

the temperature was maintained at 700°C, the cathode cd was equal to 0.2-3 a/cm² and the interpolar gap was 60-90 mm. The powders obtained contained up to 97% of metallic Ti. Impurities are introduced in the materials that constitute the liquid cathode, the electrolyte, the anode, and the raw materials. G.S.

Card 1/1

1. Titanium chlorides--Electrolysis 2. Titanium powders--Production
3. Cathodes (Electrolytic cell)--Materials 4. Electrolytes--Composition

137-58-6-12002

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 116 (USSR)

AUTHORS: Ivanov, A.I., Gopiyenko, V.G.

TITLE: Electrolysis of Titanium Tetrachloride in Fused Chlorous Salts
(Elektroliz chetyrekhkhlorigostogo titana v rasplavlennykh khlorigistykh solyakh)

PERIODICAL: Tr. Vses. n.-i. alyumin.-magn. in-ta, 1957, Nr 40, pp 388-398

ABSTRACT: Investigations of the electrolysis process of $TiCl_4$ have established that Ti can be obtained by means of electrolysis performed in fused salts of Li, K, Na, Mg, Ca, and Ba. Best results were achieved when the $TiCl_4$ was subjected to electrolysis in baths containing the following substances:
1) $KCl + NaCl + 20\%MgCl_2$ (the content of KCl and NaCl may each vary from 0 to 80%) at a temperature of 650-750°C and a cathode cd of 0.3-5.0 a/cm²; 2) 30% $CaCl_2 + 25\% BaCl_2 + 45\% NaCl$ at a temperature of 600-750° and a cathode cd of 1.0-5.0 a/cm². The cathode metal contains 90 to 100% of Ti and is contaminated with Si, Al, C, and H - all substances which are contained in materials of which the electrolyzer (porcelain,

Card 1/2

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Electrolysis of Titanium Tetrachloride in Fused Chlorous Salts

quartz, graphite), the anode (graphite), and the cathode (steel) are made, as well as in insufficiently pure raw materials and Ar. When employing an electrolytic bath of the type described under Nr 1, the current efficiency reaches the value of 44.5%, the degree of utilization of $TiCl_4$ constitutes 54.4%; the specific density of the Ti powder after hydrometallurgical processing and drying amounts to 4.15-4.30 g/cm³, the size of 50% of the particles being of -200 mesh class. A melt containing up to 80% of Ti can be obtained through electrolysis of $TiCl_4$ in a fused mixture of $AlCl_3 + NaCl$.

M.M.

1. Titanium chlorides--Electrolysis
2. Metal chlorides--Applications
3. Electrolytic cells--Materials
4. Electrolytic cells--Performance

Card 2/2

82614

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E111/E452

18.3100

AUTHORS: Anufriyeva, N.I. and Ivanov, A.I. (Leningrad)

TITLE: Electrolysis of Titanium Dioxide in Fused Salts

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No.4, pp.9-14

TEXT: The authors briefly review attempts to obtain titanium by electrolysis (Ref.1 to 6). They give results of their own work on the electrolysis of titanium dioxide in fluoride, fluoride-chloride and chloride melts, which was accompanied by determinations of TiO₂ solubility in such melts. At 800 to 950°C and cathode current densities of 0.5 to 3.0 amp/cm² and with a fused aluminium cathode, alloys with 7 to 12% (sometimes 30) Ti were obtained from fluoride and chloride-fluoride melts, but the element could not be satisfactorily separated from the aluminium; with solid molybdenum or tungsten cathodes an impure, difficultly purifiable deposit was obtained. For chloride melts an electrolyser (Fig.1) with a graphite anode and a molybdenum or tungsten rod (3 to 10 mm diameter) was used, in which an inert atmosphere was maintained. Deposition continued for 1 to 2 hours at 50 amp and 5 to 6 volts. After water treatment the deposit contained 5% impurities of which

Card 1/3

82614

S/180/60/000/004/002/027

E111/E452

Electrolysis of Titanium Dioxide in Fused Salts

the main was silicon derived from the porcelain of the container. The dependence of current efficiency and of cathodic-deposit oxygen content on various factors is shown by curves 1 and 2 respectively in Fig.2 (dependence on initial TiO_2 content of electrolyte), Fig.3 (on grains of TiO_2 added per hour to keep 5% TiO_2 in the melt), Fig.4 (as Fig.3 but for 1% TiO_2). The effect of temperature and rate of TiO_2 addition is shown in Table 1. Experiments were also carried out with a rutile concentrate (91% TiO_2 , 0.95% SiO_2 , 4.47% Fe_2O_3 , 0.19% ZrO_2) with an electrolyte of 65% $CaCl_2$, 25% $BaCl_2$ and 10% $NaCl$ at $750^\circ C$ and a current density of 15 amp/cm². The effect of rutile concentrate size on the titanium content of the deposit is shown in Table 2; in general, higher contents were obtained with finer concentrate. The work shows that titanium can be obtained electrolytically under specified conditions directly from TiO_2 or rutile concentrate. The authors show that the mechanism of the process consists basically of cathodic discharge of calcium ions, partial solution of calcium in $CaCl_2$ and reduction by the

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Card 2/3

82611

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E111/E452

Electrolysis of Titanium Dioxide in Fused Salts

calcium of TiO_2 suspended in the melt. There are 4 figures, 2 tables and 13 references: 3 Soviet, 8 English, 1 German and 1 Japanese. ✓

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Card 3/3

82615

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E111/E452

18.3100

AUTHORS:

Gopiyenko, V.G. and Ivanov, A.I. (Leningrad)

TITLE:

Electrolysis of Titanium Tetrachloride in Fused Chlorides

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No.4, pp. 15-25

TEXT: The authors have been working on titanium production by electrolysis of chloride-salt melts since 1954. They describe experiments with different electrolytes, electrode positions and materials for electrodes and other electrolyser parts, designed to produce cathodic deposits with over 90% Ti. Preliminary experiments were carried out in a laboratory electrolyser (current intensity up to 20 to 50 amp) in KCl-LiCl, KCl-NaCl, KCl-NaCl-MgCl₂, KCl-MgCl₂, CaCl₂-BaCl₂-NaCl and AlCl₃-NaCl melts at 130 to 760°C. with current densities of 0.3 to 17.5 amp/cm²; 3 to 99% Ti deposits were obtained (Table 1). Results obtained with vertical and with horizontal electrodes did not differ appreciably. Of the tested solid cathodes (types 3 and 1Kh18N9T steel, titanium, molybdenum, tungsten and copper) only copper differed in its

Card 1/3

82615
S/180/60/000/004/003/027
E111/E452

Electrolysis of Titanium Tetrachloride in Fused Chlorides

effect. Various fused metal and alloy cathodes were tried: the titanium obtained failed to dissolve but floated on the electrode surface (Table 2 gives electrode and deposit compositions) even with stirring. Laboratory experiments in a larger electrolyser at 500 to 1500 amp in general confirmed the small-scale work. Fig. 2 shows a variant with vertical electrodes which gave better results than a horizontal arrangement. Fig. 3 shows an unusual adherence of deposit to the cathode. Electrolyte compositions, electrolysis conditions and results are given in Table 3. A total of 30 kg titanium was obtained on this electrolyser in 1955: from the best deposits ingots were vacuum induction melted. The resulting titanium contained titanium-carbide inclusions. The best results were obtained with a KCl-NaCl-2%MgCl₂ melt (0 to 80% KCl and NaCl) at 650 to 750°C and a cathodic current density of 0.3 to 5.0 amp/cm²; or with 30% CaCl₂-25%BaCl₂-45%NaCl at 600 to 750°C and a current density of 1.0 to 5.0 amp/cm². The cathodic metal contained 92 to 99% Ti and was contaminated with Fe, Si, Al, C, H and other impurities.

Card 2/3

82615

S/180/60/000/004/003/027

E111/E452

Electrolysis of Titanium Tetrachloride in Fused Chlorides

but the oxygen, nitrogen, hydrogen and carbon contents were sometimes below specifications. This indicates that metal of sufficient purity can be obtained electrolytically. The authors conclude with a review of the present state of work, mainly outside the USSR, on the electrolysis of titanium tetrachloride. There are 3 figures, 3 tables and 25 references: 7 Soviet, 10 English, 2 Japanese, 1 French and 5 German. ✓

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Card 3/3

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AUTHOR: Ivanov, A.I.

TITLE: Papers on electrolytic production and refining of titanium

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splavy. no. 6, 1961. Metallotermya i elektrokhimiya titana, 124-130

TEXT: Production of Ti from $TiCl_4$ by electrolysis of melts of alkali or alkaline-earth metal chlorides with $TiCl_4$ at 700-750°C was studied. This means a maximum of 92 % of Ti is recoverable with current efficiency of 65 - 70 % and a product containing 96 - 98 % Ti, the chief impurities being O_2 , Fe, C and sometimes Si and Al. The author's experiments established the main technical requirements for electrolytic refining of Ti sponge as: 1) An electrolyte of NaCl or NaCl and KCl, containing 1.5 to 5 % lower Ti chlorides; 2) Anode current density, with vertical arrangement of electrodes, of 0.3 - 0.4 amperes/cm². With horizontal anode disposition, the

Card 1/2

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D245/D303

Papers on electrolytic production ...

current density on the anode should be 35 - 50 % lower; 3) An initial cathode current density of 0.8 - 1.5 amp/cm²; 4) Temperature 850 ± 10°C; 5) Reverse e.m.f. during electrolysis 0.1 volts. Current efficiency obtained was 0.6 - 0.7 g/A-h, voltage 3-4 volts, corresponding to a specific power consumption of 5 to 7 kilowatt hours per kg, Ti. Ti obtained by electrolytic refining of rejected Ti sponge contained: O₂ - 0.1 - 0.01 %; Fe - 0.03 - 0.06 %; Si - 0.01 - 0.05 %; N - 0.01 - 0.001 %; C - 0.06 - 0.03 %; Cl - 0.05 %. Large Ti crystals of 60 - 70 mm were produced. Duration of electrolysis was 1400 hours. There are 3 figures and 3 non-Soviet-bloc references. The references to the English-language publications read as follows: M. Alpert, F. Schultz, W. Sullivan, J. Electrochem. Soc. 1957, v. 104, no. 9, 555; M.W. Alpert, J.A. Hamilton, F.J. Schultz, W.F. Sullivan, *ibid.*, 1959, v. 106, no. 2, 70; O.Q. Leone, J.R. Nettle, D.H. Baker, Bur. Mines, Report of Investigation, 1959, no. 5494.

Card 2/2

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D228/D303

18.3100 1087

AUTHORS: Ivanov, A.I. and Anufriyeva, N.I.

TITLE: Electrolysis of titanium dioxide in molten chloride salts

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i yego splay. no. 6, 1961. Metallotermiya i elektrokhimiya titana, 131 - 135

TEXT: Experiments on the electrolysis of commercial titania, rutile concentrate, and rich Ti-slag in molten chlorides (CaCl_2 with 20 - 50 % BaCl_2 and NaCl) were carried out at 750-800° and 1000 - 1500 amp. over a period of about 500 hr. in an electrolyzer composed of the following basic units: a Mg-brick-lined bath with a graphite anode and a steel or Mo cathode; a hermetically-fixed cell; a device for decanting the electrolyte and slime; and a receiver with a pouring funnel, spherical stopper, and leverage system. The cathode and anode current-densities were 3 - 8 and 8.8 - 1.0 amp/cm², respectively, the interpolar distance being 300 mm. Conclu-

Card 1/3

Electrolysis of titanium dioxide ...

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D228/D303

clusions: After removing all the adhering electrolyte the cathode deposit contained 95 - 97, 90 - 91, and 80 - 85 % metallic Ti when commercial titania, rutile concentrate, and Ti-slag were respectively electrolyzed. The electrorefining of Ti prepared from the former material reduces the content of impurities -- Si, Fe, Mg, Al, C, N, and O -- to the quite acceptable limit of 0.23 - 0.35 %. The precipitate resulting from the electrolysis of rutile concentrate and slag also requires further refining before it is fit for industrial use. The authors worked out certain technological bases for the electrolysis of titania. These include the preliminary saturation of the electrolyte by titania, the continuous introduction of raw material, the periodic renewal of the electrolyte owing to the accumulation of slimes (CaO, CaTiO₃, TiO₂, etc.) and the possibility of repeatedly using the electrolyte and slime separated from it after their purification by chlorination. The optimum current-density (3 - 5 amp/cm²) and diameter (15 - 30 mm) for the cathode were also established. However, the experimental data disclose the existence of certain defects due both to mechanical and procedural shortcomings: The poor cohesion of the deposit with the cathode and

Card 2/3

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D228/D303

Electrolysis of titanium dioxide ...

the electrolyte's irrational circulation, causing a break-away of the former from the latter; the high sensitivity of the process, in consequence of which the technological installations deteriorate abruptly and the unsatisfactory degree of the electrolyzer's airtightness and the weakness of its iron parts. Nevertheless, the authors consider the production of Ti by the electrolysis of rutile concentrate and commercial titania to be economically feasible, and they assert that the financial costs per ton of Ti produced by this method will be less than those for metal obtained from the electrolysis of $TiCl_4$. There are 3 tables and 1 figure.

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Card 3/3

21034

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D228/D303

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AUTHORS: Ivanov, A.I., Lebedev, O.A., Timofeyev, V.V.
Vinokurov, V.B., and Frantas'yev, N.A.

TITLE: Electrolysis of titanium tetrachloride in molten
chloride salts

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Titan i
yego splavy. no. 6, 1961. Metallotermiya i elektro-
khimii titana, 136 - 144

TEXT: The authors studied the technological aspects of the elec-
trolysis of $TiCl_4$ in molten chlorides -- NaCl 50, $CaCl_2$ 35, $BaCl_2$
15 % -- in a large, laboratory pilot-plant. 403 electrolyses were
carried out, and the longest period of continuous operation, during
which the cathode and deposits were extracted 50 times, was about
100 hr. $TiCl_4$ was fed through a special quartz pipe into the space
between the stainless-steel cathode and graphite-block anode. The
following optimum conditions for electrolysis on a semi-industrial
scale were first established: 1) The saturation of the electrolyte
with $TiCl_4$ for 1 hr. at a d.c. strength of about 200 amp. and at a
Card 1/3

21034

8/598/61/000/006/019/034
D228/D303

Electrolysis of titanium tetrachloride..

TiCl₄ outlay of 1 - 1.5 l/hr.; 2) A unit-electrolysis time of 5 amp.hr./cm² -- the cohesion between the cathode and deposit is poor at 15 - 22 amp.hr./cm²; 3) A cathode current-density of approximately 1.8 - 2.0 amp/cm²; 4) An operating temperature of 720 - 750°; 5) A TiCl₄ outlay of 1 l/1000 amp.hr.; and 6) The cessation of the TiCl₄ input for 5 min. before the end of the electrolysis -- to process the electrolyte at a nominal current-strength. These specifications were then checked by experiments in an electrolyzer with a hollow cathode and fixed cell -- when it was found that varying the current-strength has little effect on the electrolyte's Ti content for a given outlay of TiCl₄ that within the limits 1.5 - 2.72 amp/cm² the cathode current-density does not influence the grade or yield of the Ti deposit, that raising the operating temperature to 800° reduces the amount of Ti precipitated at the cathode, and that varying the TiCl₄ input above or below 1 ml/l amp.hr. lowers the current-discharge as a result of the formation of Na or lower chlorides on the electrode surfaces. Additional tests showed that the current discharge is 60 - 70 %, and that the cathode metal contains 1.5 - 4 % of impurities: Fe -- from the cathode rod; C - from

Card 2/3

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Electrolysis of titanium tetrachloride.. D228/D303

the a.c. electrodes; Si, Mg and Al - from the lining of the bath; and O, H and N - whose concentration depends on the electrolyzer's airtightness. In conclusion, the authors mention certain problems which require further study if the current-discharge and grade of the metallic Ti are to be improved. These include the perfection of the technique of prolonged continuous electrolysis; the improvement in the design of the electrolyzer's components -- in particular the distributor for introducing the $TiCl_4$; and the rectification of defects in the electrolyte -- its poor ability to dissolve $TiCl_4$ and its tendency to abrade the brick-linings and steel parts. The content of impurities, whose transference is proportional to the time of electrolysis and to the area of the various working-surfaces, would be reduced by increasing the electrolyzer's airtightness, by removing the a.c. graphite electrodes, by cooling parts of the steel cathodes, by glazing the steel covers, and by lining the bath's inner walls with MgO slabs. There are 5 figures and 2 tables. X

Card 3/3