KOZLOV, K.S., Cand Tech Sci - -(diss) "National level of loading one-way railroad lines," Moscow, 1960, 21 pp (Moscow Institute of Railway Transport Engineers im I. V. Stalin) (KL, 36-60, 115)

CHERNOMORDIK, G.I., prof.; KOZLOV, I.T., inzh.; KOZIN, B.S., inzh.

Using analytical methods for determining the sectional speed of trains. Transp.stroi. 10 no.1:44-47 Ja '60. (MIRA 13:6)

(Railroads--Train speed)

CHERNOMORDIK, G.I., prof.; KOZIN, B.S., inzh.; KOZLOV, I.T., inzh.

Economically expedient traffic limitations on single-and double-track railroads lines. Transp. stroi. 10 no. 12:46-50 D '60. (MIRA 13:12)

(Railroads--Traffic)

USMANOV, Kh.U.; SADOVNIKOVA, V.I.; KOZIN, G.M.

Purification of cotton cellulose. Uzb. khim. zhur. no.2:21-28 '58.
(MIRA 11:8)

1.Chlen-korrespondent AN UzSSR (for Usmanov). 2. Institut khimii rastitel'nykh veshchestv AN UzSSR.
(Cellulose)

USMANOV, Kh.U. KOZIN, G.M.

Apparatus of the turbometric titration of polymer solutions.
Khim. i fiz.-khim. prirod. i sint. polim. no.1:99-104 '62
(MIRA 18:1)

1. Chlen-korrespondent AN UzSSR (for Usmanov).

KANDYBA, M.I., gornyy inzhener; KOZIN, G.N., inzhener-metallurg.

Increasing lumpy ore output is one of the most important tasks in mining. Gor.zhur. no.1:24-28 Ja '56. (MLRA 9:5)
(Mining engineering)

Kozin, G.N.

[illegible]

AUTHORS: Afanas'yev, [illegible], Shumov, [illegible], Epshteyn, Z.D., Ryazanov, [illegible], Kozin, G.N. and Kukuruznyak, I.S.

TITLE: Use of Oxygen in the Convertor Melting Shop of the „Krivorozhstal'" Works

PERIODICAL: Stal', 1959, Nr 9, pp 787-792 (USSR)

ABSTRACT: An outline of the composition of the convertor melting shop including some details regarding oxygen blowing equipment and the method used for the cleaning of the convertor waste gas, the influence of the composition of iron on the composition of the finished steel and some operating results are given. Main points:
The tuyere supplying oxygen to the convertor can be moved with a special mechanism vertically up and down and rotate around the vertical axis by 120 to 128° (Fig 1). Gases leaving the convertor are passed successively through a hood, lined stack, waste gas main, scrubber, Venturi, cyclone, fan into the chimney. The scrubber (5 m dia, height of the cylindrical part 18 m) serves mainly to cool the gas and to trap larger dust particles; it consumes 200 to 300 m^3/hr of water at a pressure of 6 to 9 atm. Due to the high velocity of the gas (60 to

Card 1/4

120 m/sec) the water is dispersed into a fine mist. In the Venturi tube with a throat diameter of 510 mm, particles of mist with suspended solids coagulate into comparatively large drops of a slurry which are caught in the cyclone and passed into the Dorr pond. No data on the degree of cleaning of the gas are given. The composition of pig iron used varies within the following limits: Si, 0.50 - 0.80; Mn, 1.0 - 1.4; S, 0.030 - 0.055; P, 0.09 - 0.11. The influence of silicon in pig iron on the content of phosphorus in the finished steel is shown in Fig 3. The optimum amount of silicon in pig was found to be 0.4 to 0.6%. Desulphurization of metal deteriorates with decreasing manganese content in the pig iron. Pig iron containing 0.055% sulphur should contain not less than 1.44% of manganese. The quality of lime has a considerable influence on the rate of formation and nature of the slag. In view of a considerable proportion of incompletely fired lime (up to 20%) an addition of bauxite (1.5 to 2%) is used. Changes in the composition of metal during blowing are shown in Table 1 and frequency distribution of casts with various levels

Card 2/4

of sulphur and phosphorus content for various types of steel produced in Table 2. Various types of tuyere nozzles for blowing oxygen were tested (Fig 4), the best results were obtained with a cylindrical nozzle of 65 mm diameter with the outlet widening to 75 mm. The optimum rate of blowing oxygen was found to be about 105 m^3/min at a distance of 800 to 1000 mm between the nozzle and surface of the metal. Consumption of materials per ton of steel mean weight and duration of a heat are shown in Table 3. The average weight of heat varied from 33 to 42 tons. Individual heats with charges of 70 to 72 tons confirmed the possibility of blowing a large amount of metal with 1 tuyere. At present, Gipromez is planning designs for the transfer of convertor for 53 to 55 ton charges with subsequent bottom pouring of metal into 6 eight ton ingots. It is concluded that some improvements in the productivity can be obtained by operation without the intermediate removal of slag, providing the quality of raw materials is improved. The durability of convertor lining varied

Card 3/4

from 78 to 170 heats. The quality of steel produced corresponded to requirements of GOST 380-50 for open hearth steel (nitrogen content on average 0.006%). The actual degree of desulphurization obtained amounted to 50% (of the whole sulphur introduced into the bath with materials charged). The construction of 80 to 100 ton convertors is considered advantageous. There are 4 figures and 3 tables.

ASSOCIATIONS: TsNIIChM and Zavod „Krivorozhstal'" („Krivorozhstal'" Works)

Card 4/4

AFANAS'YEV, S. G., kand.tekhn.nauk; EPSHTEYN, Z. D., inzh.; KRIVCHENKO, Yu. S., inzh.; GUREVICH, B. Ye., inzh.; KOZIN, G. N., inzh.; RUBINSKIY, P. S., inzh.; KUKURUZNYAK, I. S., inzh.; GUL'YEV, G. F., inzh.; CHIGRAY, I. D., inzh.

Operation of the "Krivorozhstal'" converter plant. Biul. TSIICHM no.5:12-16 '61. (MIRA 14:10)
(Krivoy Rog--Metallurgical plants)
(Converters)

KOZIN, G.N., inzh.; KOLGANOV, G.S., inzh.; TARAPUROV, N.P., inzh.; SAVIN, N.M., inzh.

Rapid method for the fritting of a 600-ton open-hearth furnace. Met.i gornorud.prom. no.5:76-78 S-O '62. (MIRA 16:1)
(Open-hearth furnaces--Maintenance and repair)

KOZIN, G. N., inzh.; OLEYNIKOVA, L. M., inzh.

Nitrogen in oxygen-converter steel. Met. i gornorud. prom. no.1:18-22 Ja-F '63. (MIRA 16:4)

1. Krivorozhskiy metallurgicheskiy zavod imeni Lenina.

(Steel--Nitrogen content)

KOZIN, G.N.; KRIVCHENKO, Yu.S.; KUDRINA, A.P.; VIT', Ye.F.

Service conditions and wear characteristics of refractories in oxygen-blown converters. Ogneupory 28 no.2:71-78 '63. (MIRA 16:2)

1. Krivorozhskiy metallurgicheskiy zavod im. V.I.Lenina.
(Converters) (Firebrick)

KARNAUKHOV, V.V.; SOBOLEV, S.K., kand.tekhn.nauk; GUL'YEV, G.P.; KOZIN, G.N.; KRIVCHENKO, Yu.S.

Automation of the determination of the stopping moment of blowing in an oxygen-blown converte. Met.i gornorud. prom.no. 2: 26-28 Mr-Ap '64. (MIRA 17:9)

KOZIN, G.N.; KRIVCHENKO, Yu.S.

Expanding the assortment of oxygen-blown converter steel.
Met. i gornorud. prom. no. 2:63-64 Mr-Ap '64. (MIRA 17:9)

L 32236-65 EWT(d)/EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EWP(v)/EPR/EPA(w)-2/T/
EWP(t)/EWP(k)/EWP(h)/EWP(b)/EWP(l) Pab-10/Pr-4/Pr-4/Ps-4/Pt-10/Pu-4 IJP(c)
ACCESSION NR: AP4046752 JD/WW/JG/AT/WR S/0226/64/000/005/0098/0101

AUTHORS: Serdyuk, S.M.; Gul'yev, O.F.; Kozin, S.N.; Svet, A.L.

TITLE: Temperature control of converter metal by means of zirconium boride cermet tips

SOURCE: Poroshkovaya metallurgiya, no. 5, 1964, 98-101

TOPIC TAGS: thermocouple, zirconium boride, converter process

ABSTRACT: Difficulties in replacing the insulated tips of a thermocouple during the production process were solved by using a clay plug and a supporting disk which close the opening of a converter and prevent the loss of metal regardless of the degree of erosion of the opening. Furthermore, the new device makes the use of oxygen possible to take apart the opening. The device has been successfully applied in the industrial production in a 50-ton converter. A thermocouple with a zirconium boride tip reflects all irregularities that may occur during the melting process such as changes in temperature, the amount of oxygen used, the location of the tuyeres, etc. As a result of continuous temperature control, the necessary information is obtained for the development of an

Card 1/2

L 32236-65
ACCESSION NR: AP4046752

automatic control system for temperature conditions in a Bessemer converter. The orig. art. has: 5 figures.

ASSOCIATION: Institut avtomatiki Gosplana UkrSSR (Institute of Automation, Gosplan UkrSSR); Zavod Krivorozhstal' (Krivorozhstal' Plant)

SUBMITTED: 17Dec63 ENCL: 00

SUB CODE: MM, DP NR REF SOV: 004 OTHER: 001

Card 2/2

NOVIKOV, A.N.; NEPSHA, A.V.; RODGOL'TS, Yu.S.; KORZHENEVSKIY, A.I.; GUL'YEV, G.F.; KOZIN, G.N.; KUDRINA, A.P.

Valuable contribution of inventors and efficiency promoters in the improved technical level of enterprises of refractories. Ogneupory 29 no. 5:194-196 '64.

Resin-dolomite-magnesite unfired refractories for steel smelting converters with a top oxygen blow. Ibid.:197-200 (MIRA 17:7)

1. Vsesoyuznyy institut ogneuporov (for Novikov, Nepsha, Rodgol'ts). 2. Zavod "Magnezit" (for Korzhenevskiy). 3. Zavod "Krovorozhstal'" (for Gul'yev, Kozin, Kudrina).

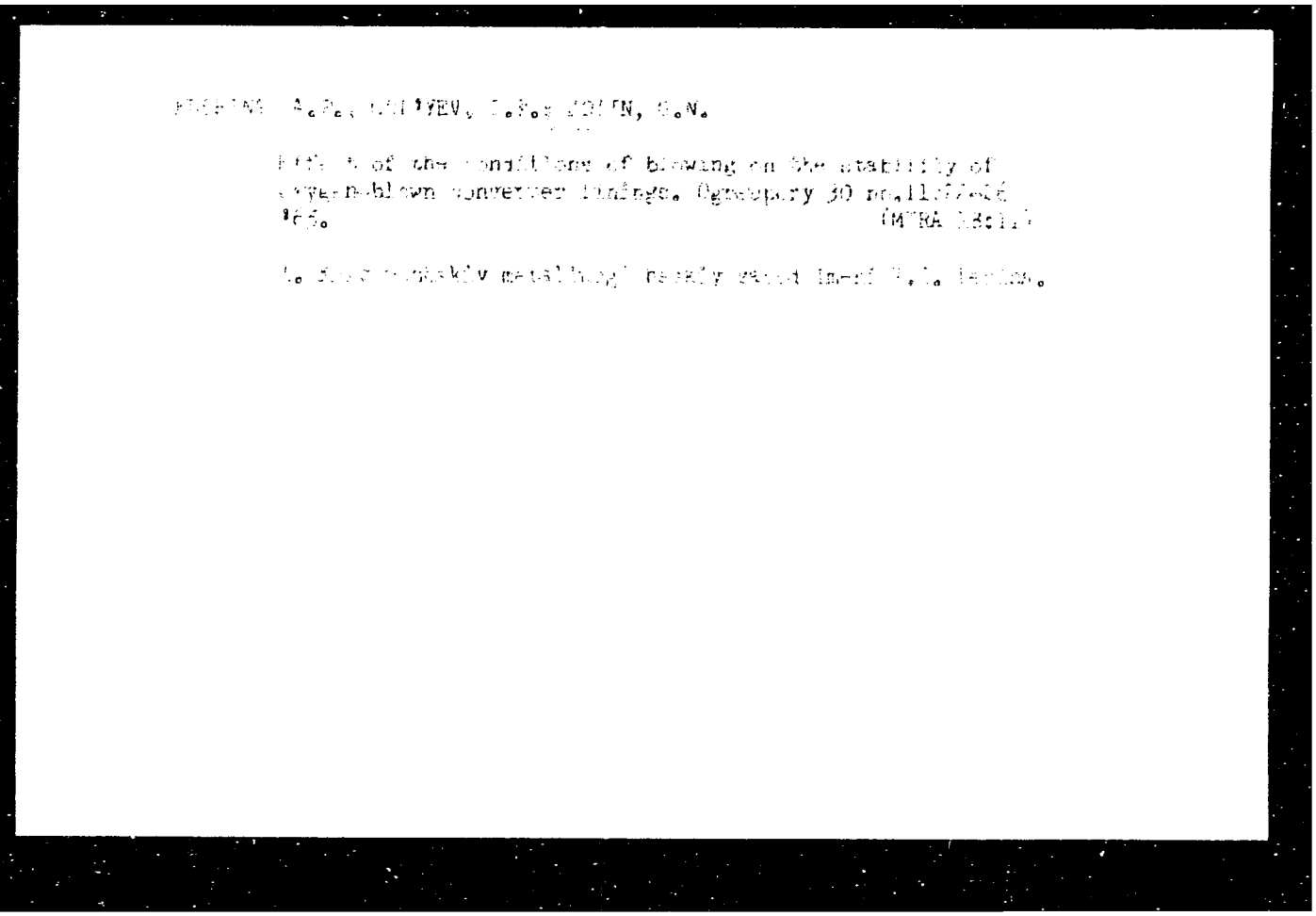
SERDYUK. S.M.; GUL'YEV, G.F.; KOZIN, G.N.; SVET, A.L.

Metal temperature control in converters with the use of ceramic metal zirconium boride tips. Porosh.met. 4 no.5:98-101 S-O '64. (MIRA 18:10)

1. Institut avtomatiki Gosplana UkrSSR i zavod "Krivorozhstal'".

SERDYUK, S.M.; SOBOLEV, S.K., kand. tekhn. nauk; KORONKO, M.I., kand. tekhn. nauk; KOZIN, G.N.; GULYAYEV, G.F.; RACHKOV, V.N.

Continuous measurement of metal temperature and carbon content control in a converter during scavenging. Avtom. i prib. no.2:13-14 Ap-Je '65. (MIRA 18:8)



KOZIN, I. (Andizhan, Uzbekskaya SSR)

Self-heating of stored raw cotton. Pozh.delo 4 no.8:10 Ag '58. (MIRA 11:9)
(Cotton--Storage)

KOZIN, I.

"Chief of the "Kuibishevgidrostroi"- Kuibishev Hydro-Electric Plant on the River Volga. Velikie Stroiki Kommunizma (Great Constructions of Communism), Acad. of Pedagogic Scis. of the RSFSR, Moscow, 1951, 383 p.

KOZIN, I.

City of miners' glory. Mast. ugl. 6 no.8:23-24 Ag '57. (MLRA 10:9)
(Kopeysk--History)

KOZIN, I.

Recreation organizers. Mast.ugl. 8 no.6:21 Je '59.
(MIRA 12:10)
(Coal miners)

KOZIN, I., (g.Kopeysk)

Man with a restless heart. Mast.ugl. 9 no.11:7 N '60. (MIRA 13:12)
(Coal miners)

KOZIN, I.

Cherenkov's method for preparing glue color. Stroitel' 2 no.4-5:15 Ap-My '56. (MLRA 10:1)
(Paint)

KOZIN, I.

Cements for fastening tiles. Stroitel' 2 no.8:19 Ag '56.
(Cement) (MLRA 9:12)

[redacted], F.

Tile setter's tool case. Stroitel' 2 no.9:26 S'56. (MLRA 10:1)
(Tile laying)

KOZIN, I.

How to use the MCh-26 lacquer. Stroitel' no.5:27 My '59.
(MIRA 12:8)

(Lacquer and lacquering)

KOZIN, I.

Mechanized application of sizing. Stroitel', no.7:14 Jl'61.
(MIRA 14:8)
(Finishes and finishing)

Card 1/3

L 40911-65

ACCESSION NR: AT5009253

average amplitude, and the agreement was found to be good. Disadvantages of the apparatus are listed, but its use is recommended (satisfactory results and convenience in handling). "In conclusion, I express my sincere thanks to M. P. Rudins for the suggested topics and for daily interest in the work." Orig. art. has: 5 figures.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 01 SUB CODE: ES, EC

NO REF SOV: 003 OTHER: 002

Card 2/3

KOMIN, I. D. --

"The Influence of Drug-Induced Sleep on the Formation of Antibodies and the Intensity of Phagocytosis." Cand Med Sci, Gor'kiy State Medical Inst, Gor'kiy, 1953. (RZhBiol, No 2, Sep 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

SO: Sum. No. 481, 5 May 55

KOZIN, M.

70th anniversary of the birth of Karlis Strazdins. Vestis Latv ak no.8:161-163 '60. (EEAI 10:9)

(STRAZDINS, KARLIS) (PHYSICIANS, LATVIAN)

KOZIN, M. (Riga)

Economic views of Fricis Garais (V. Zemtsev). Vestis Latv ak no.9:5-16 10:9 '60. (EEAI 10:9)

1. Akademiya nauk Latviyskoy SSR, Institut istorii i material'noy kul'tury.

(Latvia--Economic conditions)

KOZIN, M.

Unsatisfactory figures. Prom.koop. 14 no.8:27 Ag '60.
(MIRA 13:8)

1. Zamestitel' predsedatelya pravleniya oblpromsoveta, g. Gor'kiy.

(Physically handicapped--Rehabilitation)

KOZIN, M.

Organization and tasks of the local antiaircraft defense in apartment buildings. Voen.znan.[32] no.3:18-19 Mr '56.
(Civil defense) (MIRA 9:7)

KOZIN, M.

Economic Policy

Material resources and their significance in the planning of the national economy, Plan. khoz. no. 4, 1952

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

KOZIN, M. A.

KOZIN, M. A. -- "The Irrigation System and Water Consumption of Spring Wheat in Rostov Oblast." Min Water Economy RSFSR. Southern Sci Res Inst of Hydraulic Engineering and Soil Improvement (YuzhNIIGiM). Novocherkassk, 1955.
(Dissertation for the Degree of Candidate in Agricultural Sciences).

SO: Knizhnaya Letopis', No 9, 1956

KOZIN, M.A., kand. sel'skokhozyaystvennykh nauk.

Adding supplemental fertilizer to irrigation water. Zemledelie 6 no.6:48-51 Je '58. (MIRA 11:6)
(Fertilizers and manures)
(Irrigation)

SOV/137-58-12-24446

Translation from: Referativnyy zhurnal. Metallurgiya. 1958, Nr 12, p 71 (USSR)

AUTHORS: Baram, A. N., Nakhimov, A. M., Kozin, M. D.

TITLE: The Rolling of Flat and Round Spring Steel at the Kirov Plant (Prokatka ressornoy i pruzhinnoy stali na Kirovskom zavode)

PERIODICAL: Tr. Mezhvuz. nauchno-tekhn. konferentsii na temu Sovrem. dostizh. prokatn. proiz-va", Leningrad, 1958, pp 151-154

ABSTRACT: A new pass grooving for grooved flat spring steel permitting precise positioning of the projection and depression is developed and introduced. An initial 11x88 strip is reeled from a square 60x60 mm billet in 3 open passes (P), whereupon it is sent to an edging pass that brings the side edges to proper dimensions. Next come a closed P and an edging and finishing open P. Since the strip enters the closed P with a width determined in the first edging P, the projection and the depression are formed to sufficient accuracy. In order to produce spring of round section without scratches, laps, and seams, the billet has to be conditioned over its entire surface; hence prior to the rolling of round spring steel the leader and finishing rolls should be changed and roller guides brought into position. The

Card 1/2

The Rolling of Flat and Round Spring Steel at the Kirov Plant (cont.)

system of immersing the billets in the furnace is changed so that the springs produced will be decarburized to minimum depth. They are now emplaced not in 3 layers but in one, and this reduces by two-thirds the soaking time of the metal in the furnace.

Ya. G.

Card 2/2

KOZIN, I.G., inzh.; FEFERBOYM, G.I., inzh.; ZEL'TSER, R.S., inzh.

Efficient mobile bitumen boiler. Suggested by I.G.Kozin, G.I. Feferboim, R.S.Zel'tser. Rats.i izobr.predl.v stroi. no.16: 73-75 '60. (MIRA 13:9)

1. Trest Mosotdelstroy No.3 Glavmosstroya, Moskva, proyezd Serova, d.3.

(Bitumen)

KOZIN, I.I.

Present state and problems in the improvement of first and emergency aid for industrial accidents in the city of Kharkov. Ortop.travm. i protez. 21 no.2:53-57 F '60. (MIRA 13:12)
(INDUSTRIAL ACCIDENTS)
(KHARKOV--FIRST AID IN ILLNESS AND INJURY)

SHAKULA, N.M., inzh.; KOZIN, I.S., inzh.

Radio signaling system for inclined man-hoisting. Ugol' Ukr. '5 no.4:36 Ap '61. (MIRA 14:4)
(Radio in mining) (Mine communications)

5(2) SOV/78-4-7-40/44

AUTHORS: Shokol, A. A., Kozin, L. F.

TITLE: The Co-precipitation of Indium With Ferric Hydroxide (Soosazhdeniye indiya s gidrookis'yu zheleza)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 7, pp 1687-1691 (USSR)

ABSTRACT: The investigation of the phenomenon mentioned in the title was carried out by the plotting of precipitation curves at various pH-values and temperatures. Precipitation was carried out in a solution of iron-(III)-sulfate and indium sulfate, which was marked with In^{114}, by means of a sodium lye. Tables 1 and 2 as well as figure 3 show the experimental results. From table 4, which gives the results obtained by a precipitation by means of an urea hydrolysis at 90° it follows that a local concentration effect is not responsible for co-precipitation. Table 5 and figure 1 mention the precipitation results obtained by vaccination with $Fe(OH)_3$. The experiments confirm the adsorptive character of co-precipitation. The increasing co-precipitation with increasing temperature, however, also indicates the occurrence of secondary processes such as the

Card 1/2

The Co-precipitation of Indium With Ferric Hydroxide

formation of a solid solution of adsorbed indium hydroxide with ferrihydroxide. X-ray examinations proved that the crystal lattices of the two hydroxides are disturbed. There are 3 figures, 5 tables, and 10 references, 6 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk USSR (Institute for General and Inorganic Chemistry of the Academy of Sciences, UkrSSR)

SUBMITTED: April 24, 1958

18.3100

65692

SOV/136-59-10-9/18

AUTHORS: Shokol, A.A., Pakhomova, A.D. and Kozin, L.F.

TITLE: Production of High Purity Metallic Thallium by the Amalgamation Method

PERIODICAL: Tsvetnyye metally, 1959, Nr 10, pp 52-57 (USSR)

ABSTRACT: The object of the investigation described in the present paper was to explore the possibilities of using the amalgamation method for the preparation of high purity thallium. The amalgam process, when used for extracting thallium from solutions obtained by decomposition of thallium concentrates, makes it possible to simplify the existing technique, while the high purity of the metal is ensured by the application of anodic oxidation of the obtained amalgams. In the experiments carried out by the present authors, a 2% Cd amalgam was obtained by cementation of a solution resultant from leaching and industrial hydrated concentrate containing (g/l): 1.0 Tl, 0.6 As and 50 H_2SO_4. The recovery of thallium in the amalgam amounted to 90%, decreasing to 70% when the process was repeated. The thallium content in the amalgam obtained after double cementation did not exceed 2%. No satisfactory results were obtained when the acidity of the

Card 1/10

Production of High Purity Metallic Thallium by the Amalgamation Method

cemented solution was reduced to 5 g/l of free sulphuric acid; high proportion of arsenic, iron and other impurities present in the solution resulted in rapid conversion of mercury to slag. This showed that cadmium amalgam can be used for cementation of thallium from purified solutions only. Better results were obtained when solutions, resultant from decomposition of bichromate concentrate, were used. In cementation of thallium with cadmium amalgams from solutions obtained by decomposition of a solution of pure thallium bichromate, recovery of 95 to 97% can be attained, the degree of utilization of cadmium being 80%. The results of experiments in which the effect of the acidity of the solution on cementation of thallium with a 5% Cd amalgam was studied (volume of the solution - 100 ml; duration of the treatment - 6 hr) are reproduced in Table 1 under the following headings: Tl, Cd and H_2SO_4 content (g/l) in the starting solution; quantity (g and %) of Tl, transferred into the amalgam; quantity (g) of Cd (a) spent on thallium and (b) gone into the solution; useful consumption (%) of cadmium;

Production of High Purity Metallic Thallium by the Amalgamation Method

application of the amalgam (first time, second time, etc). It will be seen that, on average, 95% thallium was extracted in the amalgam; when the free H_2SO_4 content in the solution was reduced from 13.1 to 3.9 g/l, the degree of utilization of cadmium increased from 57 to 93%. In the experiments in which the amalgam was re-used five times, the thallium content in the amalgam reached 7%, the degree of utilization of cadmium amounting to 85%. In the next series of experiments, decomposition of the obtained amalgam (containing 2% Tl, 0.5% Cd) with solutions of various oxidizing agents, was studied; in each experiment 2 ml of the amalgam was treated with 10 ml of the solution and the results are reproduced in Table 2 under the following headings: the oxidizing agent (5% $Hg_2(NO_3)_2$, 0.1 mol $Fe_2(SO_4)_3$, ditto, 0.1 mol $FeCl_3$, ditto); duration of the treatment, minutes; quantity (g) of Tl and Cd found in the solution after cementation; the potential, E, (v) of the amalgam (after cementation) referred to normal hydrogen electrode. (In the experiment marked with an asterisk, the amalgam was converted into

Production of High Purity Metallic Thallium by the Amalgamation Method

paste.) All the investigated substances, with the exception of ferric chloride, secured full decomposition of the amalgam; for practical reasons, it is expedient to use for this purpose the iron sulphate solution. The anodic oxidation of the amalgam was carried out in an electrolyte containing 60 g/l NH_4OH and 90 g/l NH_4Cl, pure mercury being used as the cathode. The results of the electrolysis of 56.25 g of a 5% thallium amalgam are reproduced in Table 3 under the following headings: duration of the treatment, minutes; voltage, v; current density, amp/dm^2; the anode potential, E, (v) in respect to normal hydrogen electrode. The change of the anode potential with time was gradual; the electrolysis was terminated when a white deposit (thallium chloride) appeared on the anode surface. The products of electrolysis contained: thallium amalgam (anode) - 4.975% Tl (corresponding to 99.5% of the thallium content) and 0.025% Cd; cadmium amalgam (cathode) - 0.45% Cd and 0.011% Tl; electrolyte - less than 0.001% Tl and 0.025% Cd. Thus, it was shown that practically all

Production of High Purity Metallic Thallium by the Amalgamation Method

cadmium can be extracted from thallium amalgam by electrolysis in an ammonia-chloride electrolyte. The flow sheet of the process used in the large-scale experiments on the extraction of thallium from bichromate concentrate is reproduced in Fig 1. The bichromate concentrate was obtained from the solution after decomposition of 5.7 kg of industrial hydrated cake. From the resultant solution, containing 8 g/l Tl and 4 g/l H_2SO_4, thallium was extracted by room temperature cementation with a 5% Cd amalgam; 1 kg of the amalgam (re-used five times) was used for 10.5 l of the solution. The typical results obtained are reproduced in Table 4 under the following headings: application of the amalgam (first, second time etc); duration (hr) of the cementation; proportion of Tl (% of the initial content) remaining in the solution after cementation. The obtained amalgam contained 8.44% Tl, 2.6% Cd, lead, tin, bismuth, copper and other impurities. For the preparation of high purity metal it is advisable to use a more concentrated amalgam. If electrolysis is used for this purpose and if

Production of High Purity Metallic Thallium by the Amalgamation Method

an electrolyte is employed in which the potential of cadmium is more negative, a cadmium-free amalgam will be obtained; the more positive metallic impurities will remain in the "primary" amalgam. Curves plotted in Fig 2 illustrate the relationship between potential of the cadmium and thallium amalgams and the metal content (at -%) in the electrolytes for the following cases: 1 - cadmium amalgam in an electrolyte containing 2 mol NH_4OH and 1 mol $(NH_4)_2SO_4$; 2 - cadmium amalgam in an electrolyte containing 0.5 mol NH_4OH and 1 mol $(NH_4)_2SO_4$; 3 - thallium amalgam in an electrolyte containing 0.5 mol NH_4OH and 1 mol $(NH_4)_2SO_4$. It will be seen that increasing concentration of ammonia in the electrolyte, the potential of the cadmium amalgam is shifted towards the more positive values. Fig 3 shows the polarization curves of anodic decomposition of: 1 - an amalgam containing 7 at-% thallium in an electrolyte containing 0.5 mol NH_4OH, 1 mol $(NH_4)_2SO_4$ and 0.01 mol Tl_2SO_4; 2 - an amalgam containing

 5 at-% cadmium in an electrolyte containing 0.5 mol NH_4OH,

Production of High Purity Metallic Thallium by the Amalgamation Method

1 mol $(NH_4)_2SO_4$, and 0.01 mol $CdSO_4$; 3 - an amalgam containing 5 at-% cadmium in an electrolyte containing 2 mol NH_4OH, 1 mol $(NH_4)_2SO_4$, and 0.01 mol $CdSO_4$. These curves show that dissolution of cadmium takes place mainly in the initial stages of the process; in the electrolyte containing 2 mol NH_4OH, the polarization curve of the anodic decomposition of the cadmium amalgam is shifted towards the more negative values of the potential. Fig 4 shows the polarization curves of cathodic deposition for the following cases: 1 - thallium on mercury from an electrolyte containing 0.5 mol NH_4OH, 1 mol $(NH_4)_2SO_4$, and 0.1 mol Tl_2SO_4; 2 - thallium on amalgam containing 7 at-% thallium from an electrolyte of the same composition; 3 - thallium on amalgam containing 40 at-% thallium from the same electrolyte; 4 - cadmium on amalgam containing 40 at-% thallium from an electrolyte containing 0.5 mol NH_4OH, 1 mol $(NH_4)_2SO_4$, and 0.1 mol $CdSO_4$; 5 - cadmium on mercury from an electrolyte containing 2 mol NH_4OH, 1 mol $(NH_4)_2SO_4$, and 0.1 mol $CdSO_4$; 6 - cadmium on amalgam containing 40 at-% thallium from the same electrolyte. It will be

Production of High Purity Metallic Thallium by the Amalgamation Method

seen that in the case of the electrolyte containing 0.5 mol NH_4OH, the shift of the cadmium potential in relation to thallium is not sufficiently large; the current density permissible in this electrolyte (stirred at the rate of 60 rev/min) decreased from 1.2 to 0.5 amp/dm^2 as the thallium concentration in the amalgam increased; when an electrolyte containing 2 mol NH_4OH is used, the shift of the potential is larger, which makes it possible to use higher current density (1.2 amp/dm^2). The diluted thallium amalgam was concentrated by electrolysis in which mercury cathode and ammonia-sulphate electrolyte (0.5 mol NH_4OH, 1 mol $(NH_4)_2SO_4$) were used; the resultant amalgam contained 32.8% thallium, 5.6% cadmium and other impurities, the thallium content in the electrolyte being 0.27 g/l. The results of the potential measurements carried out during this operation are given in Table 5 under the following headings: quantity of electricity, amp-hr; cathode and anode potentials (v) relative to normal hydrogen electrode.

Card 8/10 The impurities were removed from the concentrated amalgam

Production of High Purity Metallic Thallium by the Amalgamation Method

by anodic polarization in an electrolyte consisting of 0.1 mol trilon B in 1.0 N solution of NaOH, at the current density of 0.5 amp/dm^2. The bulk of the impurities was removed at room temperature until thallium ions appeared in the electrolyte; the process was then continued for 3 to 4 hr at 60 to 70°C, the electrolyte being stirred at the rate of 200 rev/min; the quantity of thallium passing into the solution during this operation amounted to 10 to 20 g/l. The purified amalgam was then subjected to anodic dissolution carried out under the following conditions; cathode - platinum; electrolyte - 40 to 70 g/l $TlClO_4$, 60 to 120 g/l $NaClO_4$, 1% $N_2H_4 \cdot H_2SO_4$, 0.04 to 0.1% sodium salt of carboxymethyl-cellulose; pH equal 2 - 3; speed of stirrer - 60 rev/min. The most dense deposits were obtained at the cathode current density of 0.3 to 0.6 amp/dm^2. To reduce the quantity of mercury in the cathodic deposit, hydroxylamine was added to the electrolyte to reduce the dissolved oxygen which, by oxidizing mercury, promotes its transfer into the electrolyte. The process was carried

Production of High Purity Metallic Thallium by the Amalgamation Method

till the thallium content in the amalgam was 1%. 80.3 g of metallic thallium (equivalent to 95.5% yield) was obtained in this manner. The results of spectrographic analysis ($<$ 0.0001% Cd, 0.0001% Pb, 0.0001% Cu, 1.10^{-5}% Hg, iron, zinc, tin and aluminium not detected) confirmed that high purity (99.999%) thallium can be prepared by the method described. There are 4 figures, 5 tables and 7 references, 4 of which are Soviet and 3 German.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR
(Institute of General and Inorganic Chemistry, AS UkrSSR)

KOZIN, L.F.

Electrolyzer for the fractional dissolution of amalgams. Ukr.khim. zhur. 25 no.1:134-137 '59. (MIRA 12:4)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
(Amalgams) (Electrometallurgy)

S/019/61/000/005/053/078
A153/A127

AUTHOR: Kozin, L.F.

TITLE: An electrolyzer for amalgamated refining of metals

PERIODICAL: Byulleten' izobreteniy, no. 5, 1961, 57-58

TEXT: Class 40c, 3. No. 136565 (677625/22 of August 29, 1960).
1. An electrolyzer consisting of several successive sections interconnected by shut-off cocks, with partitions that do not reach down to the bottom, with bipolar connection of the electrodes, point-contact face cathodes, stirring rods for mixing electrolyte, and amalgam electrodes, differing in that, with the object of obtaining high-purity metals, the amalgam bipolar electrodes between the amalgam anode and point-contact face cathodes are arranged in cascades.

Card 1/1

S/019/61/000/003/055/101
A154/A027

AUTHORS: Tananayeva, N.N., and Kozin, L.F.

TITLE: A Method of Refining Indium from Thallium

PERIODICAL: Byulleten' izobreteniy, 1961, No. 3, p. 50

TEXT: Class 40a, 4650. No. 135643 (664177/22 of April 20, 1960). A method of refining indium from thallium by treating its melt with chlorine gas, distinguished by the fact that, in order to obtain indium of great purity, the initial metal is treated with chlorine gas in the presence of nitrogen at 170°C under a layer of calcium chloride hexahydrate.

Card 1/1

18(SOV/19-59-8-193/339

AUTHORS: Shokola, A.A., Kozin, L.F.

TITLE: A Method of Reducing the Amount of Mercury Getting into the Cathode Deposits of Metals in the Electrolysis of Amalgams

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 8, p 39 (USSR)

ABSTRACT: Class 40c, 1. Nr 119348 (600896 of 3 May 1958). To reduce the solubility of mercury in the electrolytes by reducing the oxygen, hydrazine, hydroxylamine, sodium sulfite and other organic and inorganic reducing agents are added to the initial solutions.

Card 1/1

S/078/61/006/004/011/018
B107/B218

AUTHORS: Kozin, L. F., Tananayeva, N. N.

TITLE: Phase diagram of the system indium - mercury

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 6, no. 4, 1961, 909-912

TEXT: As concerns the compounds of the system indium - mercury, the data on composition and melting point are contradictory (Ref. 2: J. Hildebrand. J. Amer. Chem. Soc., 35, 501 (1913); Ref. 3: H. Ito, E. Ogawa, T. Janagase. Nippon-Kinzoku-Gakkay-Schi, B 15, 382 (1951), quoted according to Chem. Abstr., 47, 12194 (1953); Ref. 4: M. Spicer, C. Bannick. J. Amer. Chem. Soc., 75, 2268 (1953)). The present paper offers experimental results concerning the melting-point diagrams of this system. Pure, twice-distilled mercury and indium of 99.999 % purity were used as initial substances. The experimental unit is schematically shown in Fig. 1. Phase transitions were studied according to the heating curves. Temperatures were measured with calibrated mercury and alcohol thermometers (correctly to the first decimal place). For mixtures containing more than 72.5 % of indium, N. S. Kurnakov's pyrometer was used. The experiments led to the

following conclusions: In the system indium - mercury there are two congruently melting compounds ($InHg_6$ and InHg) and also an incongruently melting compound (In_7Hg). The first dystectic - corresponding to $InHg_6$ - is found at about 14.3 atom% of In (melting point -14.4°C). Miscibility exists between 4.3 and 22.5 atom% of In (alpha phase). The eutectic up to 4.3 atom% of In is found at -38.7°C. The second eutectic occurs at 32.8 atom % of In (melting point -36.7°C). The eutectic straight goes from 22.5 to 48.0 atom% of In. The second dystectic corresponds to InHg (melting point -18.6°C). The miscibility of this beta phase goes from 48 to 51 atom% of indium. The next eutectic is formed at 63 atom% of In (melting point -30.1°C). It ranges from 51 to 86.9 atom% of In. Miscibility exists again between 86.9 and 100 atom% of In (gamma phase). In_7Hg melts incongruently at +65°C. Thus, the data published on $InHg_4$, $InHg_5$, and $In_{11}Hg$ could not be confirmed. The melting point (-23°C) given in Ref. 3 for InHg is lower than that obtained by the present authors. This divergence is explained by the fact that the indium used by the authors of Ref. 3 was not as pure as that used by the present authors who found that an addition of 0.97 wt% of Pb lowers the melting point of InHg by 1.5°C.

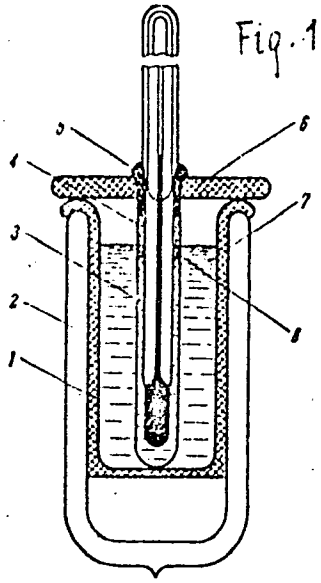
S/078/61/006/004/011/018
B107/B218

Phase diagram of the system...

There are 3 figures, 1 table, and 5 references: 1 Soviet-bloc.

SUBMITTED: March 9, 1960

Fig. 1



Legend to Fig. 1: 1) Glass vessel embedded in asbestos; 2) Dewar vessel; 3) vessel (12 by 100 mm) containing the substance to be tested; 4) wadding: 5) cork; 6) cover made of asbestos sheet; 7) cooling mixture consisting of acetone and dry ice; 8) thin glycerin layer for protection against oxidation.

Card 3/4

S/850/62/009/000/004/012
B117/B186

AUTHOR: Kozin, L. F.

TITLE: Physicochemical properties of amalgam systems. Communication I. Equilibrium potentials of amalgam systems

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk. Trudy. v. 9. Alma-Ata, 1962. Elektrokhimiya rastvorov i metallicheskikh sistem, 71-80

TEXT: Equilibrium potentials of thallium, indium, and zinc amalgams were studied by the compensation method in a perchlorate electrolyte (0.1 M metal; μ = 1) at different temperatures and metal concentrations in amalgam. Results: The potential of amalgam is a logarithmic function of the Tl concentration. It first shows considerable fluctuations as the concentration increases. When the amalgam is saturated it reaches a constant value similar to that of metallic Tl. At low temperatures the potential curves showed small curvatures indicative of a weak Tl - Hg reaction and corresponding to the formation of thermally unstable Tl_2Hg_5. In the system Zn - Hg, intermetallic compounds were not found, and the

Card 1/2

potential curves were steady. At low temperatures the potential curves of the In - Hg system showed two curvatures corresponding to the formation of $InHg_3$ and InHg. A third curvature, weakly expressed in the region of In_7Hg, has still to be studied in detail. When comparing the constitutional diagram with potential curves, the intermetallic compound $InHg_6$ was found to decompose on fusion, forming $InHg_3$ heat resistant up to 80°C. The potential of amalgams as a semilogarithmic function of concentration and temperature was shown to be linear. This fact can be used in determining the amalgam concentration and solubility of metal. There are 6 figures and 4 tables.

S/850/62/009/000/005/012
B117/B186

AUTHOR: Kozin, L. F.

TITLE: Physicochemical properties of amalgam systems. Communication II. Activity and activity coefficients of thallium, indium, zinc, cadmium, lead, tin, and tungsten in mercury

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk. Trudy. v. 9. Alma-Ata, 1962. Elektrokhimiya rastvorov i metallicheskikh sistem, 81-92

TEXT: The activity of Tl, In, and Zn in amalgam was determined by the e.m.f. method. The e.m.f. of chains of the following type was measured: Me|0.1 M $Me(ClO_4)_n$, $NaClO_5$ to $\mu = 1$|Me(Hg). Curves of the temperature dependence of the e.m.f. showed the following shapes: a hardly noticeable curvature for Tl amalgam at 17°C (decomposition temperature of Tl_2Hg_5); a distinct curvature for In amalgam at 18°C, and a rectilinear shape for Zn amalgam. From the data obtained, the author determined the temperature coefficient of e.m.f. and calculated the activity and activity coefficients

of Tl, In, and Zn. Tl - Hg showed an alternating, and In - Hg showed a strong negative deviation from the Raoult law, probably due to phase transformations and the existence of intermetallic compounds in these systems (Tl_2Hg_5, $InHg_3$). Published data were used for calculating the activity of Cd, Pb, Sn, and Bi and reducing it to the standard state of pure components, which was assumed to be the state of a metal in an infinitely dilute solution.. The values obtained for these systems were shown to be applicable for calculating the potential of amalgams in various electrolytes (Nernst equation) and for calculating the equilibrium on cementation of metals and amalgams, etc. There are 7 figures and 11 tables.

S/850/62/009/000/006/012
B117/B186

AUTHOR: Kozin, L. F.

TITLE: Physicochemical properties of amalgam systems. Communication III. Free energy, mixing enthalpy and entropy in the thallium - mercury system

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk. Trudy. v. 9. Alma-Ata, 1962. Elektrokhimiya rastvorov i metallicheskikh sistem, 93-100

TEXT: The e.m.f. and temperature coefficients calculated in Communication II were used for calculating the thermodynamic properties of the system Tl-Hg. The partial molar energy and integral molar free energy, mixing entropy and enthalpy of Tl - Hg were calculated. The partial molar free energy was shown to decrease with increasing temperature owing to an increase in solubility of Tl. The values of integral molar free energy calculated by graphic integration of the Gibbs-Duhem equation and those calculated analytically from the fundamental equation of partial quantities were in good agreement. The partial entropy decreases at higher Tl

content, and increases at higher temperatures owing to the temperature-dependent solubility of Tl. The experimental values of $\Delta \bar{S}$ are near to the curve calculated for regular solutions at a low atomic portion of Tl in Hg. Its deviation from the ideal curve is due to the limited solubility of Tl in Hg at 298°K. This also accounts for the fact that the experimental values of integral entropy are lower than the theoretical values. The Tl - Hg system may therefore be looked upon as a semiregular solution. A comparison of alternating changes in partial enthalpy which depend on the amalgam composition, and of the calculated values of integral enthalpy, with the results of other authors showed only qualitative agreement, due apparently to differences in the experimental conditions. The solution of Tl in Hg has a low heat tone reaching its maximum (+80 cal) at $N_1 = 0.15$ (298°K). The thermodynamical values determined were found to explain the shift in potentials of Tl amalgam toward electropositive values at rising temperature. There are 6 figures and 3 tables.

KOZIN, L.F.

Solubility of metals in mercury. Report No. 1: Solubility of metals in mercury as dependent on their position in the D.I. Mendeleev periodic system of elements and on certain thermodynamic and physical properties. Trudy Inst. khim. nauk AN Kazakh. SSR 9:101-121 '62. (MIRA 16:6)

(Metals) (Mercury) (Solubility)

S/850/62/009/000/009/012
B117/B186

AUTHORS: Kozin, L. F., Tananayeva, N. N.

TITLE: Anodic solution of indium amalgam

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk. Trudy. v. 9. Alma-Ata, 1962. Elektrokhimiya rastvorov i metallicheskikh sistem, 143-150

TEXT: The behavior of 10% indium amalgam in an electrolytic cell with separated anode and cathode spaces was studied during anodic oxidation. Aqueous solutions of 1 M $HClO_4$, HCl, HBr, H_2SO_4, HSO_3NH_2, and 0.1 M $HClO_4$ + 0.9 M $NaClO_4$ were used as electrolytes. Results: The current yield (depending on the current density) reaches 300% when the current density decreases to infinitely small values. The valence of indium approaches unity, so that indium goes over into the electrolyte as univalent ion. The anodic solution is accelerated and the relative number of the resulting In^+ ions is reduced as the current density increases. In correspondence with this the current density decreases

Card 1/2

Anodic solution of indium ...

considerably, reaching 100% at 24 ma/cm^2. The valence of indium simultaneously increases and indium then goes over into the electrolyte in the form of In^{3+} ions. There are 5 figures and 3 tables.

Card 2/2

KOZIN, L.F.; DAVYDENKO, G.G.

Polarographic determination of impurities in metallic thallium, thallium alloys, and thallium amalgams. Trudy Inst. khim. nauk AN Kazakh. SSR 9:157-161 '62. (MIRA 16:6)

(Thallium compounds) (Polarography)

S/850/62/009/000/011/012
B117/B186

AUTHOR: Kozin, L. F.

TITLE: Electrolyzer with a movable amalgam anode for fractionate solution of polymetallic amalgam

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk. Trudy. v. 9. Alma-Ata, 1962. Elektrokhimiya rastvorov i metallicheskikh sistem, 162-169

TEXT: An electrolytic cell is here described which comprises four chambers able to be closed hermetically. All operations of the amalgam process can be conducted in it. The principle of the device is based on a continuous circulation of amalgam used as anode, which automatically passes through each chamber, being gradually processed by the corresponding electrolytes. In the first chamber, amalgam is produced by metal dissolution in Hg or by the refining of exhaust amalgam, and dilute amalgam is concentrated. The anode potential of the electrolyte containing the dissolved salt of the metal that can be isolated or refined is controlled during anodic dissolution. In the second chamber, the amalgam is purified

Card 1/2

from electronegative admixtures by anodic dissolution at a current density of 0.5 a/dm^2 in the presence of complexing agents. The latter must correspond to the properties of the metal or admixtures contained in it. In the third chamber, the highly pure metal is produced. Very pure salts of the corresponding metal are used as electrolyte. The fourth chamber is used for the exhaust amalgam which is purified periodically and conducted into the cathode space of the first chamber. It was possible to produce 400 g spectroscopically pure thallium by refining, and 300 g metallic thallium by electrolysis in the electrolytic cell described above, which can be made of perspex, vinylplast, or gummed iron. It has the following advantages: The amalgam need not be washed and can easily be separated from the electrolyte; being under a layer of electrolyte, Hg evaporates much less; no spilling when poured from one vessel into another; electrolytes can be used much longer. There are 5 figures.

S/850/62/009/000/012/012
B117/B186

AUTHOR: Kozin, L. F.

TITLE: Electrolytic refining of indium in an electrolyzer with bipolar cascade electrodes and point cathodes

SOURCE: Akademiya nauk Kazakhskoy SSR. Institut khimicheskikh nauk. Trudy. v. 9. Alma-Ata, 1962. Elektrokhimiya rastvorov i metallicheskikh sistem, 170-181

TEXT: An electrolytic cell consisting of four bipolar electrodes connected in cascade arrangement (author's certificate no. 136565, August 29, 1960) is suggested. The advantage of this is the easy exchange of amalgam when enriched with electropositive metal additives in each chamber without electrolyte losses. In the first chamber, which forms the anode space, electrolytic decomposition of the concentrated amalgam takes place, the anode potential being continuously checked. In the other three chambers, the metal to be refined is precipitated three times. In the fourth chamber which forms the cathode space, the metal is deposited in extremely pure form on the point cathode. Using this device in a lab

Card 1/2

Electrolytic refining of indium ...

test it was possible to produce more than 300 g high-purity metal; 99.9998% of it being indium. The content of admixtures could not be ascertained either by spectrum analysis or calorimetrically. Part of the Hg can be separated from In by vacuum distillation at 1100 - 1200°C. There are 6 figures and 3 tables.

Card 2/2

S/073/62/028/006/002/002
D202/D307

AUTHORS: Shokol, A.A. and Kozin, L.F.

TITLE: The purification of gallium, indium and thallium from admixtures of mercury, cadmium and zinc by high temperature distillation in vacuum

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, v. 28, no. 6, 1962, 699-702

TEXT: The authors purified 10-12 g samples of Ga, In and Tl or their alloys from the above admixtures, by heating the metals in a quartz tube, at a pressure of 1 mm Hg, over a period of 4 hrs, at temperatures ranging from 500 to 1200°C. It was found that when the distillations were carried out at 1000 - 1200°C no Hg, Cd or Zn could be detected in the original metals, either colorimetrically or spectroscopically, the mercury being practically eliminated by a treatment at 800°C. The success of this method is ascribed to the great differences in the partial pressures of the metals concerned. There are 1 figure and 2 tables.

Card 1/2

The purification of gallium, ... S/073/62/028/006/002/002
D202/D307

ASSOCIATION: Institut obshchey i neorganicheskoy khimii AN USSR (The Institute of General and Inorganic Chemistry, AS UkrSSR)

SUBMITTED: May 15, 1961

Card 2/2

KOZIN, L.F.; NIGMETOVA, R.Sh.

Thermodynamic properties of tin-mercury alloys. Zhur. neorg. khim. 8 no.11:2556-2562 N '63. (MIRA 17:1)

KIR'YAKOV, Gleb Zakharovich; PONOMAREV, V.D., akademik, retsenzent; SONGINA, O.A., doktor khim. nauk, retsenzent; KABANOV, B.N., doktor khim. nauk, retsenzent; KUSHNIKOV, Yu.A., kand. khim. nauk, retsenzent; ILYUSHCHENKO, V.M., kand. khim. nauk, retsenzent; KOZIN, L.F., kand. khim. nauk, otv. red.; IVANOVA, E.I., red.

[Electrode processes in sulfuric acid solutions of zinc] Elektrodnye protsessy v sernokislykh rastvorakh tsinka. Alma-Ata, Nauka, 1964. 186 p. (MIRA 17:12)

1. Akademiya nauk Kaz.SSR (for Ponomarev).

KOZIN, L.F.; YEGOROVA, A.G.

Equilibrium in the In/InCl$_3$ system. [illegible] Akad. Nauk Kazakh.SSR 12:26-36 '64. (MIRA 17:2)

KOZIN, L.F.; ABROSIMOV, A.V.

Vertical electrolyzer with bipolar mercury electrodes for electrolytic refining of mercury. Trudy Inst. khim. nauk AN Kazakh.SSR 12: 194-199 '64. (MIRA 18:2)

KOZIN, L.F.; ABROSIMOV, A.V.; BUNIN, G N.

Use of electromagnetic pumps in electrolyzers for amalgam metallurgy.
Trudy Inst. khim. nauk AN Kazakh.SSR 12:200-206 '64.
(MIRA 18:2)

KOZIN, L.F.; MANKIYUKIN, A.T.

Electrochemical behavior of lead amalgam in pyrophosphate electrolytes. Zhur. fiz. khim. 38 no.9:2270-2273 S '64.
(MIRA 17:12)

1. Institut khimicheskikh nauk AN KazSSR.

L 53753-65 EWT(m)/EWP(t)/EWA(b) IJP(c) JD
ACCESSION NR: AP5012826 UR/0360/65/000/001/0013/0018

AUTHOR: Kozin, L. F.; Lavrik, I. V.; Bukhman, S. P.

TITLE: Cementation of indium by zinc amalgam in a multicompartment amalgamator with circulating electrolyte

SOURCE: AN KazSSR, Izvestiya. Seriya khimicheskikh nauk, no. 1, 1965, 13-18

TOPIC TAGS: indium recovery, zinc amalgam, precipitation

ABSTRACT: A four-compartment amalgamator with circulating electrolytes containing 9-10 g/l of metallic indium, 100 g/l NaCl, 100 and 75 g/l HCl (compositions approximating industrial) were used to study the cementation of indium by zinc amalgam in NaCl-HCl solutions. Each compartment contained 50 ml of saturated zinc amalgam. After the cementation, the indium present in the solutions was titrated with trilon B. The recovery of indium carried out in this manner can be calculated from the following formula:

$$\eta = (1 - \alpha^n) \cdot 100\%,$$

where $\alpha = C_1/C_0$ is the fraction of indium which does not undergo phase exchange in one

Card 1/2

L 51753-65
ACCESSION NR: AP5012826

of the amalgamator compartments; C_0 is the initial indium concentration in the solution for the given compartment; C_1 is the indium concentration in the solution after the phase exchange; n is the number of compartments in the amalgamator. The calculated values agreed well with experimental data. The authors also studied the recovery of indium as a function of the rate of stirring of the amalgam and solution, and as a function of the flow rate; the reaction rate was found to increase with the stirring rate. The cementation rate depends strongly on the electrolyte composition. Optimum conditions for indium recovery were determined. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 11Jun64 ENCL: 00 SUB CODE: GC

NO REF SOV: 005 OTHER: 001

Card 2/2

KOZIN, L.F.; KOBRAND, Ye.Ye.

Anodic behavior of indium amalgam in chloride solutions.
Zhur. prikl. khim. 38 no.3:579-589 Mr '65. (MIRA 18:11)

1. Submitted May 7, 1963.