MUSTEL', E.R.; GALKIN, L.S.; KUMAYGORODSKAYA; BOYARCHUK, M.Ye.

Quantitative spectral classification of F0-K5 stars with well determined distances. Izv.Krym.astrofiz.obser. 18: 3-37 '58. (MIRA 13:4)
(Stars--Classification)

GALKIN, L.S.

Investigating the A and F-type stars having an anomalous intensity of metal lines. Izv.Krym.astrofiz.obser. 19: 187-188 '58. (MIRA 13:4)
(Stars--Spectra)

22372

S/035/61/000/005/003/042
A001/A101

3,1560

AUTHORS: Mustel', E.R., Galkin, L.S.

TITLE: The spectrometric studying of hydrogen lines in spectra of peculiar stars of class A0. Part I. Hydrogen lines in spectra of "manganese", "silicon" and "magnesium" stars

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 5, 1961, 22, abstract 5A149 ("Izv. Krymsk. astrofiz. observ.", 1960, v. 22, 225-233, Engl. summary)

TEXT: The authors studied the contours of hydrogen lines in spectra of ten peculiar stars of class A0 with enhanced lines of manganese, silicon and magnesium. They obtained hydrogen line contours in spectra of eight comparison stars of classes B9 - A1. Equivalent widths of hydrogen lines $H\beta$, $H\gamma$, $H\delta$, $H\varepsilon$, $H\zeta$ and K-line (Ca II) were determined for all stars studied. The contours of hydrogen lines in spectra of "silicon" stars are identical to the contours of corresponding hydrogen lines in the spectra of comparison stars of class A0 V. The contours of hydrogen lines in spectra of "manganese" and "magnesium" stars

Card 1/2

22372

S/035/61/000/005/003/042
A001/A101

The spectrometric studying of hydrogen lines ...

studied are shallower and narrower than the corresponding hydrogen lines in the spectra of comparison stars of class A0 III. This indicates either the relatively high luminosity of the stars considered or specific conditions in their atmospheres.

From author's summary

[Abstracter's note: Complete translation]

Card 2/2

22375

3,1560

S/035/61/000/005/007/042
A001/A101

AUTHORS: Mustel', E.R., Galkin, L.S.

TITLE: The spectrophotometric study of hydrogen lines in spectra of peculiar stars of class A. Part II

PERIODICAL: Referativnyy zhurnal. Astronomiya i Geodeziya, no. 5, 1961, 32, abstract 5A227 ("Izv. Krymsk. astrofiz. observ.", 1960, v. 24, 78-90, Engl. summary)

TEXT: This is the continuation of the authors' study (RZhAstr, 1955, no. 10, 4276; 1956, no. 9, 5047). Balmer absorption lines in spectra of A-class peculiar stars are studied. The authors present lists of peculiar and normal stars, as well as the graphs of line profiles in spectra of peculiar and standard stars. Each profile was plotted from several spectrograms, to increase their accuracy. The results of comparing the profiles of peculiar and standard stars are presented in graphical form; they show that in most cases the profiles of the Balmer series in the spectra of peculiar stars agree well with the corresponding profiles in the spectra of the normal stars of a similar spectral class. Thus, in all these cases, the structure of peculiar stars atmospheres can not apparently differ mark-

Card 1/2

22375

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A001/A101

The spectrophotometric study ...

edly from the structure of normal stars atmospheres of a similar class. To confirm additionally this conclusion, electronic pressure n_e (n_m) was determined for a number of stars studied by the formula: $\lg n_e = 23.26 - 7.5 \lg n_m$; the quantity $N_{02}H$ was determined by the formula: $N_{02}H = (mc^2/\pi e^2 \lambda^2 f) W_\lambda$, and the quantity $n_e(H\gamma)$ by the formula: $W_\lambda^5/^2 = kN_{02}Hn_e (R_c/0.45)^{3/2}$ assuming the value of $H_{02}H$ already calculated. All these parameters are presented in tables. Graphs are also presented illustrating the relations between $\lg n_e$ (n_m) and $\lg n_e$ ($H\gamma$), and between $\lg N_{02}H$ and $\lg n_e$ ($H\gamma$). The analysis of these graphs also confirms that apparently the structure of atmospheres of the most peculiar stars differs slightly from the structure of atmospheres of the normal stars of a similar class. It is noted that in some cases (e.g. α^2Psc) the profiles of Balmer lines of peculiar stars do differ noticeably from the corresponding profiles of the standard stars spectra. There are 9 references.

From authors' summary

[Abstracter's note: Complete translation]

Card 2/2

S/035/62/000/007/024/083
A001/A101

AUTHORS: Mustel', E. R., Kopylov, I. M., Galkin, L. S., Kumaygorodskaya, R.N., Bartash, T. M.

TITLE: Spectrophotometric study of Nova Herculis 1960. I.

PERIODICAL: Referativnyy zhurnal, Astronomiya i Geodeziya, no. 7, 1962, 31, abstract 7A236 ("Izv. Krymsk. astrofiz. observ.", 1961, v. 26, 181 - 216; English summary)

TEXT: About 120 spectrograms of Nova Herculis and ζAql taken as a standard were taken in March - April 1960 with the 122-cm reflector of the Crimean Astrophysical Observatory, mainly with a quartz spectrograph with dispersion of 155 A/mm at Hγ. The following quantities were determined: equivalent widths Wλ and values of Δλ(km/sec) for emission hydrogen lines Hβ-H9, as well as central intensities I_o with respect to continuous spectrum for all identified emission lines in the spectrum of N Her. Changes of these characteristics of emission lines in the course of time were generally analyzed. The average speed of envelope expansion was estimated (1,850 km/sec) from the width of hydrogen lines.

Card 1/2

S/035/62/000/007/024/083
A001/A101

Spectrophotometric study of Nova Herculis 1960. I.

Approximate brightness and date of maximum luminosity of N Her were determined from spectral changes observed in this Nova: $m_{max} = 2^m.50 \pm 0^m.17$ (probable error); March $1 \pm 2^d.5$ (probable error). The absolute magnitude of the Nova in maximum was determined ($M_v = -10^m.0$), as well as distance to the star (R = 1,250 pc) and total interstellar absorption in visual light at star distance ($A_v = 2^m.0$). By comparing with ξ Aql relative energy distribution was obtained for each night in continuous spectrum of N Her within the wavelength range $\lambda\lambda$3,512 - 5,050. Balmer decrement was calculated from lines $H\beta$-H_9. There are 12 references.

From authors' summary

[Abstracter's note: Complete translation]

Card 2/2

GALKIN, L.S.

Spectrophotometric study of the peculiar star 73 Draconis. Izv. Krym. astrofiz. obser. 31:23-36 '64. (MIRA 17:9)

SHUBIN, I., (Sverdlovsk); LIFOROV, G., (Rostov-na-Donu); PARUSHAVICHUS, G., (Vil'nyus); GALKIN, M., (Alma-Ata); KASHTAN'YER, Al.; ANATOL'YEV, E.; SERGEYEV, N.; VASIL'YEV, K.

News from everywhere. Sov.foto 21 no.3:44-46 Mr '61. (MIRA 14:4)

1. Predsedatel' fotosektsii Soyuza zhurnalistov (for Galkin).
(Photography)

GALKIN, M.

Power of observation and diligence. Sov. foto 22 no.12:28-29 D '62. (MIRA 16:1)

1. Predsedatel' fotosektsii Soyuza zhurnalistov KazSSR.

(Photographers, Russian)

GALKIN, M.A.

Defects in the planning of production costs and means of eliminating them. Sel'khozmashina no.9:23-27 S '54. (MLRA 7:9)

1. Zavod "Krasnaya zvezda"
(Costs, Industrial)

GAIKIN, Mikhail Aleksandrovich; NIKITIN, Viktor Alekseyevich; KOLTUNOVA, M.P., red.; BOBROVA, Ye.N., tekhn. red.

[Business accounting for locomotive repair plants; practices of the V.I. Lenin Locomotive Repair Plant in Rostov] Khoziaistvennyi raschet na parovozoremontnom zavode; iz opyta raboty Rostovskogo parovozoremontnogo zavoda im. V.I. Lenina, 1958. 101 p. (MIRA 11:7)

(Rostov-on-Don—Locomotives—Maintenance and repair)

GALKIN, M.A.

25(5) PHASE I BOOK EXPLOITATION SOV/2934

Burmistrov, Nikolay Semenovich, (Deceased), Mikhail Aleksandrovich Galkin, Pavel Fedorovich Matveyev, Grigoriy Akimovich Neshitov, and Nikolay Georgiyevich Ozhimkov

Planirovaniye vspomogatel'nykh tsekhov mashinostroitel'nogo zavoda (Planning the Setup of Auxiliary Shops at a Machine-Building Plant) 2nd ed. Moscow, Mashgiz, 1958. 278 p. 4,000 copies printed.

Ed.: N.S. Burmistrov, Engineer (Deceased); Reviewers: B.V. Voskresenskiy, Economist; P.G. Kalinin, Economist; and A.I. Shuster, Economist; Ed. of Publishing House: A.A. Salyanskiy; Tech. Ed.: V.D. El'kind; Managing Ed. for Literature on the Economics and Organization of Production: T.D. Saksaganskiy.

PURPOSE: This book is intended for employees at machine-building plants who are engaged in planning.

COVERAGE: The book deals with problems in planning the setup and operations of various auxiliary shops and services at a

Card 1/7

machine-building plant. The organization of work in such auxiliary units as the machine-repair shop, the tool shop, the industrial power plant, the transportation service, etc. is reviewed, and suggestions are made for improving their labor productivity. Production and maintenance costs of auxiliary shops and units are analyzed, and possibilities of reducing cost investigated. Preparation of estimated expenditures and of monthly financial statements showing results of operations are discussed. The operation of each auxiliary shop or service of the plant is analyzed. Several chapters are written by different authors. No personalities are mentioned. No references are given.

TABLE OF CONTENTS:

GALKIN, M.A.; KURBET, S.A.; KIRILLOV, L.I.

Design of machinery and the cost of its production. Trakt. i sel'-khozmash. 32 no.7:25-27 Jl '62. (MIRA 15:7)
(Agricultural machinery)

GALKIN, Mikhail Aleksandrovich; POPKOV, Ivan Varfolomeyevich; SURGANOV, B.S., red.; KHODASEVICH, Yu.G., mlad. red.

[Collection of problems for the course "The organization and planning of an industrial enterprise"] Sbornik zadach po kursu "Organizatsiia i planirovanie promyshlennogo predpriiatiia." Moskva, Ekonomika, 1965. 135 p. (MIRA 18:5)

GALKIN, M.A.

Ore potential and ore controlling role on the Nal'chan fault zone. Geol. i geofiz. no.7:112-116 '65. (MIRA 18:9)

1. Yakutskoye geologicheskoye upravleniye.

GALKIN, Mikhail Fedorovich; SOLOMIN, Anatoliy Nikolayevich; SANDOMIRSKIY, Mark Moiseyevich; SHAKHOV, Mikhail Alekseyevich; ZHERMUNSKAYA, L.B., inzh., red.; FREGER, D.P., red.izd-va; BELOGUROVA, I.A., tekhn. red.

[Nickel-free 5KhGV steel for forging dies] Beznikelevaia stal' 5KhGV dlia shtampov pri goriachei shtampovke. Leningrad, 1961. 14 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Metallovedenie i termicheskaia obrabotka, no.7) (MIRA 14:12)
(Steel alloys—Testing) (Dies (Metalworking))

SOLNTSEV, Yuriy Parfir'yevich; GALKIN, Mikhail Fedorovich; LITVAK, Valeriy Abramovich; SLITSKAYA, I.M., inzh., red.; SHILLING, V.A., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Reducing metal consumption for risers of ingots and castings] Puti snizheniia raskhoda metalla na pribyl'nuiu chast' slitkov i otlivok. Leningrad, 1961. 21 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Liteinoe proizvodstvo, no.2) (MIRA 14:7)

(Steel castings)

GALKIN, Mikhail Fedorovich; SOLNTSEV, Yuriy Porfir'yevich; SEROV, Gennadiy Vladimirovich; SOKOLOV, A.N., red.; KATSNEL'SON, N.Ye., red.izd-va; GVIRTS, V.L., tekhn. red.

[Improved procedure for the smelting of 1Kh18N9TL steel] Usovershenstvovanie tekhnologii vyplavki stali 1Kh18N9TL Leningrad, 1962. 20 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Liteinoe proizvodstvo, no.4) (MIRA 15:10)
(Chromium-nickel steel--Metallurgy)

L 27417-66 EWT(d)/EWT(m)/EWP(c)/EWP(v)/T/EWP(t)/EWP(k)/EWP(h)/EWP(l) IJP(c) JD

ACC NR: AR6009951 SOURCE CODE: UR/0137/65/000/012/V046/V046

40
B

AUTHORS: Vladimirov, N. F.; Galkin, M. F.; Sointsev, Yu. P.

TITLE: Development of programmed electrical operating conditions for the smelting of steel in an arc furnace in connection with automation of the process

18

14

SOURCE: Ref. zh. Metallurgiya, Abs. 12V347

REF SOURCE: Elektrotermiya. Nauchno-tekhn. sb., vyp. 44, 1965, 64-67

TOPIC TAGS: steel, steel industry, arc furnace, smelting furnace, computer programming, computer/ VU-5086 computer

ABSTRACT: A technique is presented for formulating a computer program based on the electrical operating conditions corresponding to the most economical conversion of 1 ton of steel. On the basis of the characteristics of 400 smeltings of various steel types in a furnace of 3-ton nominal capacity, the correlation dependences of the furnace operation characteristics--the specific smelting period τ and the specific electrical power consumption W--on the mean active power P were found in the form

$$\tau = A_1 + B_1 P + C_1 P^2,$$
$$W = A_2 + B_2 P + C_2 P^2,$$

where A_1, B_1, C_1, A_2, B_2, and C_2 are the coefficients of the regression equation. Calculations of the most economical power permit values to be determined for the duration and mean active power for particular stages of the smelting period:

2

Card 1/2 UDC: 669.187:621.365.2

L 27417-66

ACC NR: AR6009951

1) t_1 = 8 min, P_1 = 1360 kw; 2) t_2 = 40 min, P_2 = 1750 kw; 3) t_3 = 15 min, P_3 = 1500 kw. The calculated values can be specified as program data for the computer VU-5086. It is found that, for oxidized carbon content of 0.30--0.50% and more, the economical power is independent (with sufficient accuracy) of the oxidized carbon content. 5 figures, 1 table. (Iz RZh Elektrotekhn.) (Translation of abstract)

SUB CODE: 11, 09

Card 2/2

L 62806-65 EWT(m)/EWP(w)/EPF(c)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b) IJP(c) MJW/JD/WB

ACCESSION NR: AP5018145 UR/0128/65/000/007/0001/0003

621.746.757:669.14.018.8

33

B

AUTHOR: Gulyayev, B. B. (Doctor of technical sciences); Kuzin, A. V. (Engineer); Galkin, M. F. (Candidate of technical sciences); Chivikin, Ya. Ye. (Engineer)

TITLE: Defects in high-alloy steel castings and their prevention

SOURCE: Liteynoye proizvodstvo, no. 7, 1965, 1-3

TOPIC TAGS: high alloy steel, casting defect, steel casting, chromium steel

ABSTRACT: The development of chemical machine building has necessitated extensive casting of complex alloy steels containing 18-20% of Cr, about 0.10% C, Ni, Mn, Ti, and other admixtures. These steels are hard to handle and the intensive interactions of Cr, Ti, and Mn with atmospheric oxygen and nitrogen during smelting and casting result in specific casting defects - blisters and subskin porousness. Even minute variations in the content of the basic components affect the mechanical and other (corrosion resistance, magnetic permeability) properties. The paper describes a detailed study of the nature of these defects in Kh18N9TL, Kh20N5G12AFL and Kh25N5TMFL steels, and offers detailed recommendations for and description of casting procedures which prevent the appearance of

Card 1/2

L 62805-65
ACCESSION NR: AP5018145

the above-mentioned defects. Orig. art. has: 2 formulas, 10 figures, and 2 tables.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 005 OTHER: 000

Card 2/2

GALKIN, M.I., inzhener.

Experience from the construction of the Leningrad Reinforced Concrete Products Factory. Biul.stroi.tekh. 13 no.2:7-11 F '56. (MLRA 9:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po organizatsii i mekhanizatsii stroitel'stva.

(Reinforced concrete construction)

GALKIN, M. N.

GALKIN, M. N. : "The thermal consitions for the flow of metal in the channels of a casting mold." Min Higher Education USSR. Moscow Aviation Technological Inst. Moscow, 1956.

SO: Knizhnaya letopis'
No 21, 1956. Moscow

GALKIN, M., inzhener.

Equipment for mounting columns. Stroitel' 2 no.4-5:11 Ap-My '56.
(MLRA 10:1)

(Columns, Concrete)

GALKIN, M.N., kand.tekhn.nauk

Effect of the configuration of castings on heat-accumulating properties of the sand mold. Trudy MATI no. 48:5-10 '60.
(MIRA 14:2)

(Molding (Founding))

GALKIN, M.N., kand.tekhn.nauk

Mechanism of the solidification of flowing metal. Trudy MATI no. 48:20-26 '60. (MIRA 14:2)
(Founding) (Solidification)

GAIKIN, M.L., kand.tekhn.nauk; [illegible], inzh.; [illegible]

Investigation of [illegible] in pouring the metal into the mold. Trudy MATI no. [illegible] 160. [illegible]
(Founding) ([illegible] Transmission)

GALKIN, N.N., kand.tekhn.nauk

Heat conditions for metal flow in foundry mold gates. Trudy MATI no. 48:57-78 '60. (MIRA 14:2)
(Foundries--Equipment and supplies)
(Fluid mechanics)

[illegible], A.A., kand.tekhn.nauk; GALKIN, M.P., kand.tekhn.nauk

Molding cylindrical bosses and flat ribs in sand molds. Trudy NATI no. 48:79-102 '60. (MIRA 14:2)
(Molding (Founding))

ACCESSION NR: AT4019715 S/2536/63/000/058/0005/0020

AUTHOR: Galkin, M. N. (Candidate of technical sciences, Docent); Stebalov, Ye. S. (Candidate of technical sciences)

TITLE: Squeeze casting of thin-walled panels

SOURCE: Moscow. Aviats. tekhn. institut. Trudy*, no. 58, 1963. Teploobmen pri lit'ye vy*zhimaniyem (Heat exchange during squeeze casting), 5-20

TOPIC TAGS: squeeze casting, squeeze casting technique, squeeze casting unit LV-1, thin-walled panel, squeeze cast panel, aircraft construction

ABSTRACT: The authors analyze the process of filling stationary casting molds and discuss squeeze casting mechanisms for an angular or plane-parallel return of the matrix from one or both sides. A description is given of a currently operational unit LV-1 (see Figs. 1 and 2 in the Enclosure). The unit's weight is 9500 kg net; it is 3240 mm long, 2850 mm wide and 1500 mm high. Maximum lid return pressure is 6800 kg. The unit is operated by two men and can produce 4-6 casts per hour (up to 2100 mm long, 1200 mm high and 1 mm or more in thickness). Preparation of the unit and the operating procedure are described. Tolerances are held to + 0.5 mm on panel face across a length of 200 mm, ± 0.3 mm for thickness of wall and ribs and ± 1 mm for linear dimensions and diameters of lugs. The microvariance of the

Card 1/4 2

ACCESSION NR: AT4019715

face surface does not exceed 0.04 mm. Average elongation of the cast panels was 3%, tensile strength 22 kg/mm^2. Orig. art. has: 15 illustrations and 1 graph.

ASSOCIATION: Aviats. tekhn. institut. Moscow (Institute of Aviation Technology)

SUBMITTED: 00 DATE ACQ: 23Mar64 ENCL: 02

SUB CODE: MA, ML NO REF SOV: 007 OTHER: 000

Card 2/2

ACCESSION NR: AT4019716 S/2536/63/000/058/0021/0046

AUTHOR: Galkin, M. N. (Candidate of technical sciences, Docent); Govseyev, L. L. (Docent)

TITLE: Thermal analysis of a casting crucible

SOURCE: Moscow. Aviats. tekhn. institut. Trudy*, no. 58, 1963. Teploobmen pri lit'ye vy*zhimaniyem (Heat transfer during squeeze casting), 21-46

TOPIC TAGS: squeeze casting, casting, crucible, crucible design, temperature gradient, alloy casting, alloy temperature, casting temperature, alloy hardening

ABSTRACT: The flow, cooling and hardening of alloys can readily be regulated during squeeze casting, but thin-walled castings of high quality can only be obtained with strict regulation of the thermal and hydrodynamic conditions. During casting, the crucible cools rapidly and marked temperature gradients arise in the alloy, which are equilibrated during solidification. For this reason, in the design and construction of crucibles for squeeze casting equipment, special requirements with regard to the temperature field of the alloy should be taken into consideration. The present paper deals with the results of experimental and mathematical studies on the cooling of the alloy during pouring, the temperature field

Card 1/3

ACCESSION NR: AT4019716

in the alloy prior to extrusion from the crucible, and the profile of the solid alloy crust formed on the walls. Two harmonious solutions are derived which permit calculation of the tridimensional temperature field in the alloy during cooling in the ladle and metal conduits, the time of onset of hardening in the crucible, and the amount of crust at any point on the crucible wall. Calculations show that the temperature of the alloy in the crucible drops by 44C during casting, producing a longitudinal temperature gradient of as much as 56C. During the next 50 seconds, the average temperature drops by 30C, while the temperature gradient remains unchanged for 33 seconds and then drops to 15C during the last 17 seconds. A hard alloy crust, 2 mm thick, is formed at the ends of the crucible, and the vertical temperature gradient at the center before extrusion can reach 45C. Comparison of the theoretical results with experimental data on the LV-1 squeeze casting machine, the crucible of which is shown in the Enclosure, indicates that this approach permits calculation of the optimal temperature field in the alloy prior to extrusion and application of the appropriate corrections in the selection of machine design and thermal parameters. Orig. art. has: 20 figures and 16 formulas.

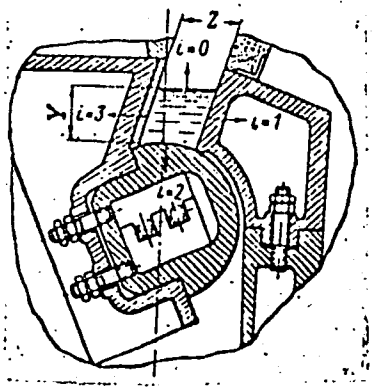
ASSOCIATION: Aviats. tekhn. institut, Moscow (Institute of Aviation Technology)

SUBMITTED: 00 DATE ACQ: 23Mar64 ENCL: 01

Card 2/3 SUB CODE: MM NO REF SOV: 004 OTHER: 000

ACCESSION NR: AT4019716

ENCLOSURE: 01



Cross section of the crucible of a squeeze casting machine

Card 3/3

ACCESSION NR: AT4019717 S/2536/63/000/058/0047/0080

AUTHOR: Galkin, M. N. (Candidate of technical sciences, Docent)

TITLE: The theory of alloy squeezing and panel formation

SOURCE: Moscow. Aviats. tekhn. institut. Trudy*, no. 58, 1963. Teploobmen pri lit'ye vy*zhimaniyem (Heat transfer during squeeze casting), 47-80

TOPIC TAGS: squeeze casting theory, squeeze casting technology, metal extrusion, panel formation, squeeze casting, alloy squeeze casting

ABSTRACT: The flow, cooling and hardening of alloys can readily be regulated during squeeze casting, but thin-walled castings of high quality can only be obtained with strict regulation of thermal and hydrodynamic conditions. In the present paper, the author describes the mathematical theory of alloy squeeze casting and panel formation in squeeze-casting machines with a plane-parallel and angular (unilateral or bilateral) approach of the dies; panel formation on the LV-1 machine is taken as an example. The theoretical calculations show that it is possible to select the hydrodynamic conditions of alloy extrusion so as to obtain specified relationships between time and the duration, speed and acceleration of alloy motion. Using the formula:

Card 1/4

ACCESSION NR: AT4019717

$$\bar{P}=\frac{\bar{\tau}^{k}-\frac{\bar{\tau}^{mk}}{m}}{1-\frac{1}{m}}$$

the operating conditions of the LV-1 machine may be chosen in consideration of the relationship between time and the angle, speed and acceleration of die rotation. Thus, for example, the geometrical relationship between the angle of approach of the die (φ) and the position of the alloy front (y) is given by:

$$\bar{\varphi}=1-\frac{1}{\bar{P}\dfrac{\bar{Y}_n-1}{\dfrac{a}{\bar{Y}_0}+1}+1}\cdot\frac{\dfrac{1}{\bar{P}(\bar{Y}_n-1)+1}-\dfrac{\xi}{R_0}}{1-\dfrac{\xi}{R_0}}$$

The alloy cooling and hardening processes during and after extrusion may be calculated by means of:

$$\frac{dt-\frac{Q}{c}d\bar{g}}{\alpha_1\theta_1+\alpha_2\theta_2}=-\frac{\tau_n}{c\gamma}\frac{d\bar{\tau}}{\bar{P}},$$

Card 2/4

ACCESSION NR: AT4019717

both for the central part and for ribs, nodes, etc. A diagram of the temperature distribution is shown in the Enclosure. It has been shown that the procedures selected for the LV-1 machine are close to optimal. However, some improvement in the quality and stability of the castings may be attained by decelerating alloy extrusion in the deadhead so that 40-60% more of the alloy will harden in the working part of the mold. Orig. art. has: 31 figures and 42 formulas.

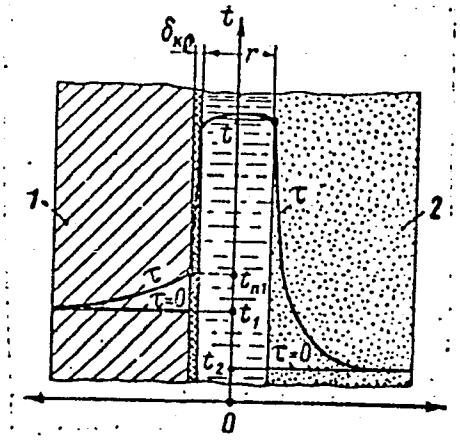
ASSOCIATION: Aviats. tekhn. Institut, Moscow (Institute of Aviation Technology)

SUBMITTED: 00 DATE ACQ: 23Mar64 ENCL: 01

SUB CODE: MM NO REF SOV: 004 OTHER: 000

Card 3/4

ACCESSION NR: AT4019717 ENCLOSURE: 01



Temperature distribution in the alloy cross-section and mold walls

Card 4/4

BR

ACCESSION NR: AT4019718 S/2536/63/000/058/0081/0099

AUTHOR: Galkin, M. N. (Candidate of technical sciences, Docent); Tarasutin, T. G. (Engineer); Pushkin, I. L. (Engineer)

TITLE: Thermophysical properties of materials

SOURCE: Moscow. Aviats. tekhn. Institut. Trudy*, no. 58, 1963. Teploobmen pri lit'ye vy*zhimaniyem (Heat transfer during squeeze casting), 81-99

TOPIC TAGS: casting, squeeze casting, steel casting, heat conduction, thermal conductivity, core material, mold wash, core parameter, thermophysical property

ABSTRACT: The flow, cooling and hardening of alloys can readily be regulated during squeeze casting, but thin-walled castings of high quality can only be obtained with strict regulation of thermal and hydrodynamic conditions. In the present paper, assuming that the core material is homogeneous, the authors present a simple experimental technique for determining the principal thermophysical constants of cores and mold washes, as well as the heat capacity and latent heat of solidification of alloys. By the method of pouring metal into molds, the authors derive a relationship between the principal parameters of a and b cores, prepared from wet sand, self-hardening and quick-drying materials, and their density and moisture content or the concentration of binder. The experimental data are shown

Card 1/2

ACCESSION NR: AT4019718

in the form of nomograms which permit rapid selection of the appropriate coefficients. In the same way, the authors investigated the thermal conductivity of various washes and the relationship between this value and the number of casting operations. It was found that the thermal conductivity increases with the number of castings, rising particularly sharply after the first one. This increase in thermal conductivity is the result of both an increase in heat conduction and a decrease in thickness. This technique for the experimental determination of the true and average heat capacity and latent heat of solidification simplifies practical tests and increases their accuracy. Orig. art. has: 15 figures, 2 tables and 24 formulas.

ASSOCIATION: Aviats. tekhn. inst., Moscow (Institute of Aviation Technology)

SUBMITTED: 00 DATE ACQ: 23Mar64 ENCL: 00

SUB CODE: MM, TD NO REF SOV: 006 OTHER: 000

Card 2/2

ACC NR: AT7003186 (A) SOURCE CODE: UR/2536/66/000/067/0135/0158

AUTHORS: Galkin, M. N. (Doctor of technical sciences, Professor); Kats, E. L. (Engineer)

ORG: none

TITLE: Peculiarities of forming thin-walled hermetic castings

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 67, 1966. Voprosy proizvodstva otlivok is alyuminiyevykh splavov (Problems of producing aluminum alloy castings), 135-158

TOPIC TAGS: metal casting, cooling, porosity, temperature distribution, solid solution, aluminum alloy, heat conductivity, grain size/ AL2 aluminum alloy, AL4 aluminum alloy

ABSTRACT: The characteristics of forming thin-walled hermetic castings are examined. The discussion involves the conditions for cooling the melt in the mold, the mechanism of micropore formation and its mathematical description, the feed elements of the casting, and the temperature and solid-phase distributions in the melt when filling the mold. The forming of a two-flange fitting is analyzed. It is found that, from the moment of contact, aluminum alloys are cooled relatively slowly in sand and in painted metal molds. When this low relative rate is changed by one order of magnitude, the microstructure of the casting is changed considerably. The micropores

Card 1/3 UDC: 669.714:621.74

are arranged about the grain boundaries in the form of narrow channels, chiefly along the walls (see Fig. 1).

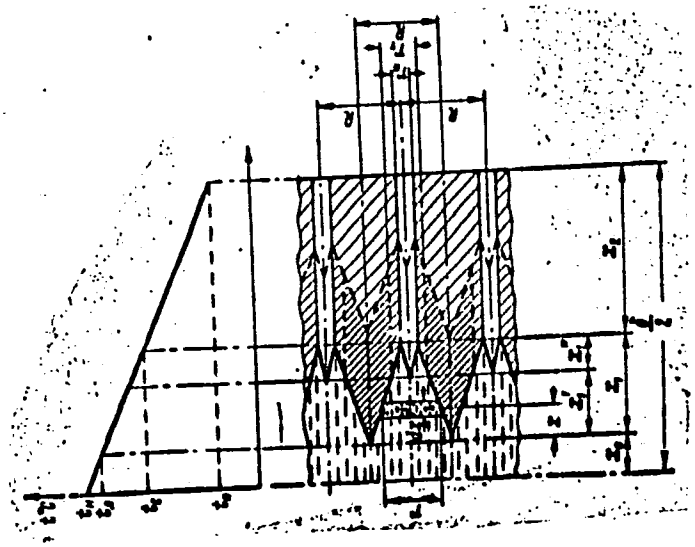


Fig. 1. Diagram of crystallization and formation of micropores in casting solid-solution alloy

ACC NR: AT7003186

A standard working formula is derived for small values of the relative porosity coefficient as:

$$\overline{K} = \frac{6\nu\alpha\lambda\Delta t\left(1+\frac{c\alpha_m\vartheta_m^2}{\varrho\lambda\cdot 2}\right)}{p_0\cdot g\cdot R^2\gamma\varrho}$$

where Δt is the hardening time; ν - the kinematic modulus of viscosity; g - the acceleration of gravity; λ - the heat conductivity of the casting material; α_m - the heat conductivity of the mold; ϑ_m - the temperature drop in the mold; ϱ - the latent heat of solidification; R - the macrograin size; γ - the density of the melt; and p_0 - pressure. Alloys with a high eutectic content have areas with a flat hardening front. Equations are derived for the temperature field and the solid-phase distribution that make it possible to analyze the forming of a large thin-walled casting from the moment of pouring. Orig. art. has: 18 formulas, 6 photographs, 9 diagrams, and 3 graphs.

SUB CODE: 13/ 11/ SUBM DATE: none

Card 3/3

Galkin, MS

✓ 1978. Galkin, M. S., On the solution of the Cauchy problem for a certain equation (in Russian), *Prikl. Mat. Mekh.* 20, 2, 271-276, Mar.-Apr. 1956.

Author considers solution of the following initial-value problem

$$[au''(x)]'' - bu(x) = 0,$$

in the interval (0, 1), where a and b are positive functions of x, which together with their first derivatives are continuous in the given interval. This kind of differential equation controls transverse vibrations of beams. In general the problem has to be solved by some approximate method. If the solution happens to be oscillatory then an approximation would very likely contain large errors. Author makes a rigorous analysis of the generation of errors in such a case. He shows that when the functions $a(x)$ and $b(x)$ are not constants the general solution will contain terms with $\exp(x)$ and $\exp(-x)$. He also shows how to obtain those terms and how to exclude them from the solution. The results are contained in three theorems with long and quite involved proofs.

T. Lewis, USA

JPRS/DC-281
CSO DC-1906

Name: GALKIN, M. S.

Dissertation: Methods for computing proper natural oscillations in a case of close natural frequencies

Degree: Cand Phys-Math Sci

Defended at: Acad Sci USSR, Mathematical Inst imeni V. A. Steklov

Publication ~~Defense Date~~, Place: 1956, Moscow

Source: Knizhnaya Letopis', No 2, 1957

SMELOVSKIY, N.V.; GALKIN, M.Ye.

Experience of the First State Bearing Plant in introducing spring measuring heads. Izm. tekh. no. 1:10-11 Ja '61. (MIRA 14:1)

(Measuring instruments)

GAIKIN, M.Ye.

Organize the output of air-conditioning units. Izm.tekh. no.12:62 D '61. (MIRA 15:1)

(Air conditioning--Equipment and supplies)

GALKIN, N.

The "Vladimir Il'ich" Plant. Vop. ekon. no.4:93-102 Ap '60.
(MIRA 13:3)

1.Sekretar' partiynogo komiteta moskovskogo zavoda imeni Vladimira Il'icha.
(Moscow--Machinery industry)
(Efficiency, Industral)

TARASOV, M.; GALKIN, N.

Unit for testing slings. Stroitel' 9 no.5:insert 1-4 My '63.
(MIRA 16:9)

(Slings and hitches--Testing)

GLAZKOV, I., polkovnik, voyennyy letchik pervogo klassa; [illegible], K., podpolkovnik, voyennyy letchik vtorogo klassa; [illegible], V., polkovnik, voyennyy shturman pervogo klassa

Landing approach by the homing system. Av. i kosm. 48 no.12: 52-56 D '65. (MIRA 18:11)

L 58474-65 EWT(d)/EWT(m)/FA/EWP(h)/EWP(1) Po-4/Pq-4/Pg-4/Pk-4/Pl-4 IJP(c) BC

ACCESSION NR: AP5014816 UR/0209/65/000/006/0059/0061

AUTHOR: Glazkov, I. (Colonel, Military pilot first class); Galkin, N. (Lieutenant Colonel, Military pilot second class)

TITLE: Automatic longitudinal balancing system for turboprop aircraft

SOURCE: Aviatsiya i kosmonavtika, no. 6, 1965, 59-61

TOPIC TAGS: aircraft control equipment, turboprop aircraft

ABSTRACT: Among the various stabilizers installed in aircraft, automatic longitudinal balancing systems have lately been used on a large scale. An automatic altitude-control trimmer can be employed to extend the use of the autopilot, improve maneuverability, and increase flight safety while flying with the autopilot turned on.

This control system, which automatically provides for the longitudinal balancing of an aircraft guided by autopilot, consists of force sensors, angular velocity transducers, critical trimmer-deflection sensors, trimming and time-delay units, relay amplifiers, indicator lamps, and a control button.

Card 1/3

ACCESSION NR: AP5014816

The automatic control system does not exclude the use of a semiautomatic push-button control mechanism. Thus, when the pilot is warned by a signal light that the automatic control system has been cut off by the trimmer, he can, without turning off the autopilot, relieve the forces developing on the altitude control system by pressing the "trimmer" button located on the control stick.

It is very easy to control an aircraft by the use of an autopilot with the automatic altitude-control trimmer turned on. However, during a sudden change in flight direction the automatic trimmer may cause an overload. This is also possible in the case of an autopilot malfunction.

To eliminate these safety hazards, the automatic trimmer-control is provided with a device for turning off the system for the duration of evolutions which give rise to angular velocities with respect to lateral axis in excess of 0.4°/sec, which corresponds roughly to an overload of 0.1.

The angular velocity transducer, a sensor element, cuts off the system. It generates and converts an electric signal proportional to angular velocity.

L 58474-65
ACCESSION NR: AP5014816

The critical trimmer-deflection sensor cuts off the trimmer control as soon as deflection angles of 7° upward and 4° downward are attained.

The automatic trimmer-control system enables a pilot using manual controls to carry out longitudinal balancing by means of the "trimmer" button. This system ensures automatic and semiautomatic aircraft balancing under any operating conditions and does not disturb either the stability of an aircraft being flown by manual controls or longitudinal stabilization with the autopilot turned on. Orig. art. has 2 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: AC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 4008-F

Card 3/3

L 9742-66 EWT(d) BC
ACC NR: AP6000257 SOURCE CODE: UR/0209/65/000/011/0056/0060

AUTHOR: Glazkov, I. (Colonel, Military pilot first class); Galkin, N. (Lieutenant colonel, Military pilot second class); Krylov, V. (Colonel, Military navigator first class)

ORG: None

TITLE: An automatic control system

SOURCE: Aviatsiya i kosmonavtika, no. 11, 1965, 56-60

TOPIC TAGS: aircraft control system, automatic control system, airborne computer, navigation computer, aircraft autopilot, automatic navigator, navigation equipment

ABSTRACT: Aircraft guidance control systems not only carry out the functions of automatic control but also issue instructions to the pilot according to which he may perform flight maneuvers according to a prescribed trajectory. The authors describe a "Privod" piloting-navigation system. In addition to an automatic control system, the Privod is coupled with a computer, the radiotechnical equipment of an SP-50 landing system, an RSBN-2 short-range navigation and landing system, and an automatic pilot. It is intended for affecting the landing approach maneuver,

Card 1/2

L 9742-66
ACC NR: AP6000257

using course and glide equipment; and for plotting the pre-landing maneuver and flight on a prescribed course, trajectory, and altitude. The various components of the system, its function, and landbased aids such as beacons, are discussed. The authors noted that the Privod system presents no difficulty for the crew in flight, and that the experiences of the authors may prove to be beneficial in this respect. The experiences of the authors are to be related in another article. Orig. art. has: 3 figures.

SUB CODE: 17,01,09/ SUBM DATE: None

Card 2/2

L 15404-66 EWT(d) IJP(c) BC

ACC NR: AP6000628 SOURCE CODE: UR/0209/65/000/012/0053/0056

AUTHOR: Glazkov, I. (Colonel, military pilot first class); Galkin, N. (Lt. Colonel, military pilot second class); Krylov, V. (Colonel, military navigator first class) 43 23

ORG: None

TITLE: The landing approach according to the "Privod" system

SOURCE: Aviatsiya i kosmonavtika, no. 12, 1965, 53-56

TOPIC TAGS: aircraft guidance equipment, command guidance system, aircraft guidance

ABSTRACT: The authors describe the actions of the crew and the piloting technique using the "Privod" command guidance system, both in the landing approach situation and during a flight with a prescribed itinerary (cross-country flight). The authors analyze in some detail landing approach techniques from a square configuration called a "box" as well as the techniques associated with a straight approach run pattern. Wind velocity drift angle corrections and banking angles are analyzed as they pertain to landings based on this system. Three to five training flights are sufficient to enable a good crew to land an aircraft with

Card 1/2

L 15404-66

ACC NR: AP6000628

this system. Particular attention is given to the safety features of this guidance pilot-assist system. Orig. art. has: 1 figure.

SUB CODE: 17 / SUBM DATE: none

Card 2/2

GALKIN, N.A., inzhener.

Some shortcomings in designing gravel roads. Avt.dor.20 no.1:24 Ja '57. (MLRA 10:3)

(Roads, Gravel)

L 13065-65 EPA(s)-2/EWT(m)/EPF(n)-2/EWA(d)/EPR/EWP(t)/EWP(b) Ps-4/Pt-10/
Pu-4 AS(mp)-2/ASD(m)-3/BSD/SSD(a) MJW/JD/WW/JG/WB/MLK

ACCESSION NR: AT4046824 S/0000/64/000/000/0096/0103

AUTHOR: Korneyev, V. L.; Vernidub, I. I.; Galkin, N. P.; Dobrokhotov, L. N.; Gostev, Ye. A.

TITLE: High temperature oxidation of aluminum powder

SOURCE: AN SSSR. Nauchnyy sovet po probleme zharoprochnykh splavov. Issledovaniya staley i splavov (Studies on steels and alloys). Moscow, Izd-vo Nauka, 1964, 96-103

TOPIC TAGS: aluminum powder, aluminum powder oxidation, high temperature oxidation

ABSTRACT: Considerable attention is currently being paid to high-temperature metal oxidation. The present article is a continuation of investigations (see V. L. Korneyev and I. I. Vernidub Vysokotemperaturnoye okisleniye dispersnogo alyuminiya. Sb. "Issledovaniya po zharoprochnym splavam", vol. 7. Izd-vo AN SSSR, 1961) on the high-temperature oxidation of aluminum, including the results of a further study of the process of high-temperature oxidation of aluminum powder in oxygen. Standard aluminum powder, grades P-1, P-2, P-3 and P-4 with densities of 0.975, 0.825, 1.075 and 0.924, respectively, were used together with bottled oxygen. A special unit designed for the oxidation is described in the article.

Card 1/4

ACCESSION NR: AT4046824

The 0.8 g sample was placed in an even layer on a quartz plate. A certain oxygen flow and pressure were then set, the MPO-2 oscillograph was switched on, and the mixture was illuminated intermittently by automatic electric flashes. The completeness of the reaction was found by chemical analysis of the reaction products, and the oxygen consumption was measured on the oscillogram. The entire process was filmed by a special SKS-1 movie camera at 2000-3000 frames per second. It is assumed that a primary oxide film is formed on the surface of P-1, P-2, P-3 and P-4 aluminum powders, insulating the aluminum from direct contact with the oxygen. Therefore, for further oxidation, the aluminum and oxygen atoms must penetrate through the oxide film. On the basis of tests, it is assumed that the heat from the flame penetrates through the aluminum layer. For highly dispersed aluminum powder, the emitted heat is sufficient for penetration into the aluminum layer. A certain number of aluminum and oxygen atoms penetrate through the oxide film. The reaction causes emission of heat which is used for further heating of the powder, accelerating the reaction, and the process develops at such speed that no liquid phase is formed. The formation of individual spots of molten aluminum is explained by local heat emission sufficient to melt the metal. The tests showed direct formation of a liquid metal phase during high-temperature oxidation of P-2 aluminum powder. Further oxidation may cause boiling and evaporation of the liquid aluminum. The oxide film prevents escape of aluminum vapor into the atmosphere. Most of the vapor therefore remains and when the internal pressure exceeds

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L 13065-65
ACCESSION NR: AT4046824

the external pressure there is an explosion and the aluminum vapor is liberated. Evaporation then proceeds continuously from the opened metal surface. The oxide vapors are condensed on the outer surface of the aluminum oxide, forming small balls in a ring around the liquid aluminum. Fig. 1 of the Enclosure illustrates a drop of liquid aluminum schematically. The moving pictures revealed the process of high-temperature diffusion. Curves included in the article show that the zone is very unequal in the oxide layer due to the unequal particle surfaces, their varying dimensions and distribution. The average rate of diffusion was 26-32 mm/sec for P-2, 23-30 mm/sec for P-3 and 15-22 mm/sec for P-4. The proportion of aluminum powder taking part in the oxidation was 48% for P-1, 72% for P-2 (in some cases 95-96.5%), 54% for P-3 and 51% for P-4. The P-2 aluminum thus takes part in the oxidation process much better than the other grades. On the basis of tests, it was found that P-1, P-3 and P-4 aluminum powders are oxidized at high temperatures in oxygen without forming a liquid phase. The P-2 aluminum powder, on the other hand, forms a molten powder, evaporates and the mixture of aluminum and oxygen react as gases. Orig. art. has: 8 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 16Jun64 ENCL: 01 SUB CODE: MM

Card 3/4 NO REF SOV: 001 OTHER: 000

L 13065-65
ACCESSION NR: AT4046824

ENCLOSURE: 01

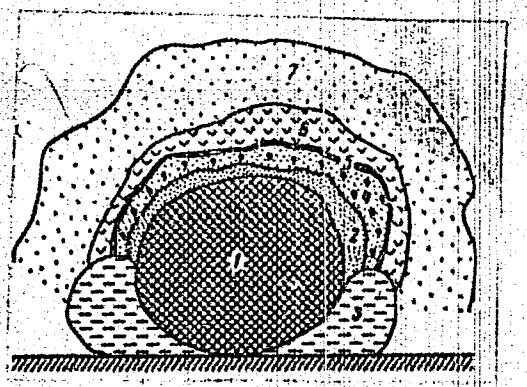

Fig. 1. Schematic cross section through a drop of liquid aluminum:
1 - Al drop; 2 - Al vapor; 3 - molten Al_2O_3; $Al+O_2$ vapor-gas mixture; 5 - reaction zone; 6 - Al_2O_3 vapor; 7 - oxygen.

Card 4/4

GALKIN, N. I.

TARASOV, P. V. - Inzh. i, KORCHAGIN, A. A. - Inzh., SAKHAROV, I. G. - Avkh., GALKIN, N.I.- St. Nauchn., FILLIPOV, A. V. - Chl.-Korr. Akademii Arkhitektury SSSR Prof.

Nauchno-issledovatel'skiy institut stroi-tel'noy tekhniki Akademii arkhitektury SSSR

Tipy keramicheskikh izdeliy, tekhnologiya ikh izgotovleniya i metody krepleniya
Page 100

SO: Collection of Annotations of Scientific Research Work on Construction, completed in 1950, Moscow, 1951

GALKIN, N. I.

Measuring Distances in Mines, Ugol', No 2, 1952.

S/182/61/000/011/003/005
D038/D113

AUTHOR: Galkin, N. I.

TITLE: On the precision of forged parts

PERIODICAL: Kuznechno-shtampovochnoye proizvodstvo, no. 11, 1961, 23-25

TEXT: The article deals with erroneous data given in technical literature on the dimensions of formulas for working parts of dies and punches. As an example, the author discusses a book by M. Ye. Zubtsov entitled "Listovaya shtampovka" (Sheet Forging) and published by Mashgiz 1958, and states that dies for extruding, blanking and forging calculated by Zubtsov had to be redesigned, as the diameters in one case were 0.050 mm smaller and 0.400 mm smaller in another. In other cases formulas for punching and extruding hollow workpieces proved to be inaccurate. The author concludes that formulas for calculating the dimensions of the working parts of dies, in the new edition of this otherwise fairly good book, ought to be corrected in accordance with the author's suggestions, and the specifications brought in line with ГОСТ 7713-55 (GOST 7713-55). There are 2 figures and 2 Soviet-bloc references.

Card 1/1

GALKIN, N.M.

USSR/ Miscellaneous

Card 1/1 : Pub. 61 - 18/23

Authors : Galkin, N. M., and Ivanov, Z. F.

Title : Machine for cutting skeleton wire

Periodical : Lit. proizv. 3, page 29, May-June 1954

Abstract : A simple machine for rapid cutting of skeleton wire (production of rods and bars), is described. Drawing.

Institution : ...

Submitted : ...

GALKIN, V. N.

GALKIN, V. N. -- "Base for Utilization of Pneumatic [illegible] and Tools in the Machine-Building Industry." Sub. to Acad Sci, Inst of Labor Red Banner Higher Technical School imeni Bauman (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Vechernaya Moskva, January-December 1952

GALKIN, N. N.

USSR/Engineering-Space requirements

Card : 1/1

Authors : Galkin, N. N., Cand. of Tech. Sciences

Title : Computation of the area of assembling plants for mass production and individual operations

Periodical : Vest. Mash. 34/5, 38 - 42, May 1954

Abstract : Four ways of calculating the space required for an assembling plant are presented and the various points are analyzed and calculations by formulas are made for each step.

Institution : ....

Submitted : ....

GALKIN, N. N.

"Guide on the Choice of Spectacles" Leningrad, 1955, by the Leningrad Section of the State Publishing House for Medical Literature.

This book contains practical advice for occulists and opticians on the methods of choosing the appropriate spectacles, with basic theoretical principles.

SO: D526604

GALKIN, Nikolay Nikolayevich

[Manual on the selection of spectacles] Posobie po dodboru ochkov. Izd.2., ispr. i dop. Leningrad, Medgiz, 1960. 183 p. (MIRA 14:7)

(SPECTACLES) (OPTOMETRY)

KOTLYAROV, Ye.L.; GALKIN, N.P., inzh., nauchnyy red.; KRYUGER, Yu.V., red. izd-va; GOL'BERG, T.M., tekhn. red.

[Safety engineering guide for mechanics and lubricators in cement plants] Pamiatka po tekhnike bezopasnosti dlia motorista-smazchika tsementnogo zavoda. Moskva, Gos. izd-vo lit-ry po stroit., materialam, 1960. 7 p. (MIRA 14:7)
(Cement plants--Safety measures)

PHASE I BOOK EXPLOITATION SOV/5823

Galkin, Nikolay Petrovich, and Vladislav Borisovich Tikhomirov

Osnovnyye protsessy i apparaty tekhnologii urana (Principal Processes and Equipment in Uranium Production) Moscow, Gosatomizdat, 1961. 218 p. 5000 copies printed.

Ed. (Title page): B. S. Kolychev, Candidate of Technical Sciences; Ed.: Z. D. Andreyenko; Tech. Ed.: S. M. Popva.

PURPOSE : This book is intended for technical personnel of plants, scientific research institutes, and design bureaus of the uranium industry, and may also be used as a textbook at chemical engineering and mining schools of higher technical education.

COVERAGE: Principal processes and equipment used for recovering uranium from ores are discussed. Concise information on the theory of uranium production processes (grinding, classification, dehydration, leaching, ion exchange, hydrometallurgical extraction, crystallization, drying, and stirring) is presented, and modern

Card 1/7

methods of calculating these processes are explained. Principal equipment of uranium industry plants is described and its performance characteristics are given. The authors thank B. S. Kolychev for his assistance. References, mostly Soviet, accompany each chapter.

TABLE OF CONTENTS:

MARTIN, F.S.; MAYLS, Dzh.L.[Miles, G.L.]; ZARUBIN, A.I.[translator]; KOLYCHEV, B.S. [translator]; SAGALOVICH, I.D. [translator] GALKIN, N.P., prof. doktor tekhn.nauk, red.; KAMAYEVA, O.M., red.izd-va; ATTOPOVICH, M.K., tekhn.red.

[Chemical processing of nuclear fuels] Khimicheskaia pererabotka iadernogo topliva. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 264 p. Translated from the English. (MIRA 14:8)

1. Head of Chemistry Section, Australian Atomic Energy Commission (for Mayls).

(Nuclear fuels)

21(1) 5(2) SOV/89-7-2-9/24

AUTHORS: Galkin, N. P., Tikhomirov, V. B., Goryaynov, N. Ye., Fedorov, V. D.

TITLE: The Mechanism by Which a Liquid Is Dispersed in a Plate Extractor and Ways of Improving the Dispersion (Mekhanizm dispergirovaniya zhidkostey v tarel'chatom ekstraktore i sposob yego intensifikatsii)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 2, pp 159 - 160 (USSR)

ABSTRACT: The difference between the normal and the better modified version of the extractor consists in the fact that in the modified extractor an air inlet pipe is installed beneath the inlet for the light phase. This opening of the pipe is in the center of the column and is directed upwards. There are no overflow pipes in the extractor. The whole stream has to pass thru the openings in the plate. A stable operation of the column is ensured when the airflow moves at 0.03 m/s over the whole cross section of the column. When the airconsumption increases, bubbles form between the liquid drops and these bubbles reduce the contact surface. The new column with the air agitation system incorporated, was tested with the following systems: water -

The Mechanism by Which a Liquid Is Dispersed in a Plate Extractor and Ways of Improving the Dispersion SOV/89-7-2-9/24

nitric acid - uranyl nitrate - tributyl phosphate in petroleum. The separation properties are approximately threetimes higher than those of a normal column. The total liquid load can be $\sim 30\ m^3/m^2$ in case of an optimum air agitation. The dependency of the extraction capacity upon the intensity of the air agitation was determined by experiment. The result is shown in a diagram. The extraction loss caused by the air stream is negligibly small. There are 2 figures.

SUBMITTED: March 31, 1959

Card 2/2

PHASE I BOOK EXPLOITATION SOV/3830

Galkin, N.P., A.A. Mayorov, and U.D. Veryatin

Tekhnologiya pererabotki kontsentratov urana (Technology of Processing Uranium Concentrates) Moscow, Atomizdat, 1960. 162 p. Errata slip inserted. 4,000 copies printed.

Ed.: T.P. Kalyuzhnaya; Tech. Ed.: Ye. I. Mazel',

PURPOSE: This book is intended for chemical engineers and technicians in uranium production.

COVERAGE: The book presents the theory and description of processes in the treatment of uranium concentrates to obtain pure salts and uranium metal. The authors discuss the applications of uranium, the properties of uranium and its ions in solution, methods for the production and refining of uranium concentrates, methods for the preparation of uranium tetrafluoride, the preparation of uranium metal, and measures for ensuring the safety of personnel in uranium manufacturing. The author also cites earlier books on uranium by Dzh. Kats and Ye. Rabinovich, S.Ye. Bresler, O.A. Songina, and I.P. Kislyakov. There are

Card 1/6

Technology of Processing Uranium Concentrates SOV/3830

261 references: 91 Soviet, 101 English, 36 French, 27 German, 4 Italian, and 2 Swedish

TABLE OF CONTENTS:

Card 2/6

5.2200,5.4120,21.3000

78330
SOV/89-8-3-15/32

AUTHORS: Galkin, N. P., Stepanov, M. A.

TITLE: Solubility of Uranium Hydroxide (IV) in Caustic Soda. Letter to the Editor

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 3, pp 258-261 (USSR)

ABSTRACT: Little is known about the precipitation of uranium (IV) hydroxide in a strongly alkaline medium. Only recently, Gayer and Leider (see ref) showed that the hydroxide of uranium (IV) is amphoteric. The equilibrium constant of the reaction:

$$U(OH_4) + OH^- \rightleftharpoons H_3UO_4^- + H_2O \qquad (1)$$

is $1.7 \cdot 10^{-4}$. Since the solubility of the hydroxide was studied only up to a 0.6 N concentration of the alkali, the authors decided to check the applicability of the above relation for more concentrated alkaline solutions. Hydroxide of uranium (IV) was precipitated

Card 1/5

Solubility of Uranium Hydroxide (IV) in Caustic Soda. Letter to the Editor

78330
SOV/89-8-3-15/32

from the hydrochloric acid solution by means of a water sclution of caustic soda. The hydrochloric acid solution of uranium (IV) was prepared following prescriptions found in literature. The hydroxide of uranium (IV) was precipitated by adding 30 ml of a 0.34 N solution of caustic soda to 2 ml of the uranium chloride solution; the tightly closed test tube was kept for 6 hr in an air thermostat at 20° C, with continuous stirring of the contents. Decanting the precipitate three times in a pure argon atmosphere with water, the authors achieved considerable purity. A qualitative reaction on chlorine ion using silver nitrate gave a negative result. The authors note that the statement found in Gmelins (Handbuch der Anorganischen Chemie, Auflage 8, Hr. 55-Uran und Isotope, Berlin, 1936, S. 100), that potassium and sodium cannot be washed away from uranium (IV) hydroxide, seems to be wrong. Spectral analysis showed the absence of sodium (below 0.01%) when the precipitation was achieved using the caustic soda solution.

Card 2/5

Solubility of Uranium Hydroxide (IV) in Caustic Soda. Letter to the Editor

78330
SOV/89-8-3-15/32

This solution was prepared using chemically clean substances. Next, the authors added to the precipitate fixed quantities of alkaline and distilled water. Probes were then mixed in thermostats at 25 ± 1°C during 6 days (8 hr per day). The clear fraction was filtered through a paper filter, and the uranium content was then determined. Results are on Fig. A. The authors state that conclusions of Gayer and Leider are valid only up to a 0.5 N concentration. Above this concentration the linear relationship is destroyed, and Eq. (1) is not valid. The decrease in uranium concentration may be explained by salting out by means of sodium ions, if one assumes that a new compound NaH_3UO_4 is formed in the pricipitate. Analyzing the solid phase, the authors came to the conclusion that the proposed compound can be stable only in strongly alkaline media, while in the presence of water an hydrolysis starts which can be described by the equation:

Card 3/5

$$NaH_3UO_4 + H_2O \rightleftarrows U(OH)_4 + NaOH \qquad (2)$$

Solubility of Uranium Hydroxide (IV) in Caustic Soda. Letter to the Editor

78330
SOV/89-8-3-15/32

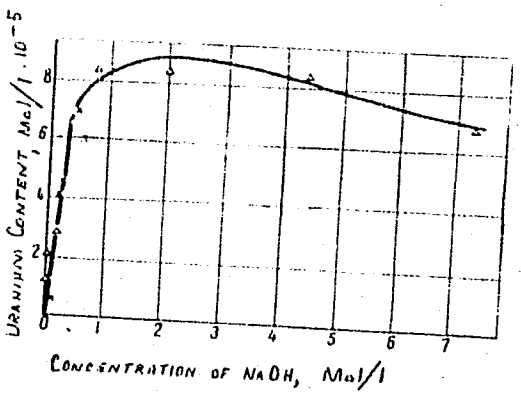

Fig. A. Concentration of uranium (IV) versus alkalinity of medium. (△) present data; (x) data by Gayer and Leider.

Card 4/5

Solubility of Uranium Hydroxide (IV) in Caustic Soda. Letter to the Editor

78330
SOV/89-8-3-15/32

There are 1 figure; 2 tables and 9 references, 4 Soviet, 2 French, 1 German, 1 Canadian, 1 U.S. The Canadian and U.S. references are: K. Gayer, H. Leider, Canad. J. Chem. 35, Nr 1, 5 (1957); J. Katz, E. Rabinowitz, Chemistry of Uranium, M., Izd-vo inostr. lit., 1954.

SUBMITTED: November 27, 1959

Card 5/5

84896

S/089/60/008/006/022/023/XX
B006/B063

21.3200

AUTHORS: Galkin, N. P., Sudarikov, B. N., Zaytsev, V. A.

TITLE: Interaction Between Uranium Hexafluoride and Ammonia

PERIODICAL: Atomnaya energiya, 1960, Vol. 8, No. 6, pp. 530 - 534

TEXT: The authors studied the interaction between uranium hexafluoride and ammonia in the temperature range from -50 to +200°C for the purpose of determining the reaction equations at different temperatures and measuring the rates and thermal effects of the reactions. The reaction of uranium hexafluoride with liquid and gaseous ammonia was examined with an apparatus schematically shown in Fig.1:

Card 1/6

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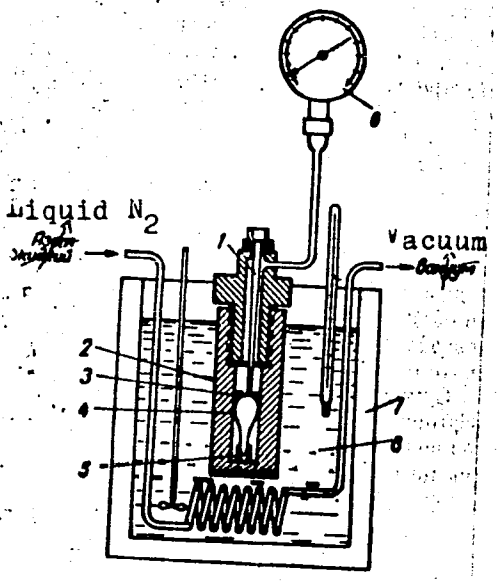
Interaction Between Uranium Hexafluoride and Ammonia

S/089/60/008/006/022/023/XX
B006/B063



1 - distributor, 2 - reaction bomb, 3 - solid UF_6, 4 - quartz ampoule containing liquid NH_3, 5 - holder of the ampoule, 6 - pressure gauge, 7 - Dewar, 8 - solutions of NH_4Cl, NaCl, $ZnSO_4$, $CaCl_2$, etc.

Fig.1

Card 2/6

84896

Interaction Between Uranium Hexafluoride and Ammonia

S/089/60/008/006/022/023/XX
B006/B063

The UF_6 - NH_3 reaction in the gaseous phase was examined with the apparatus shown in Fig. 2:

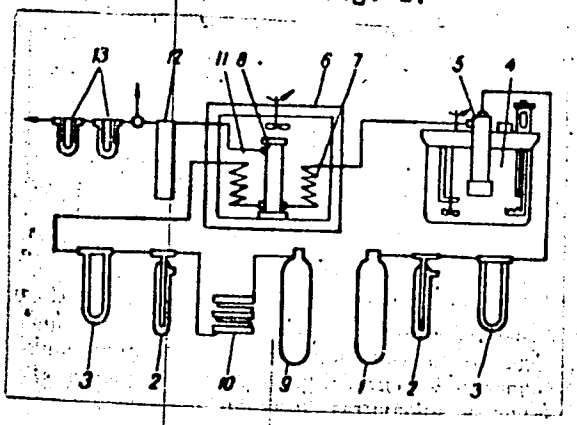


Fig.2

1 - flask filled with argon, 2 - monostat, 3 - flowmeter, 4 - water thermostat, 5 - UF_6 vaporizer, 6 - air thermostat, 7 - UF_6 preheater, 8 - reactor, 9 - flask filled with ammonia, 10 - drying column filled with KOH, 11 - NH_3 preheater, 12 - condenser, 13 - trap.

Card 3/6

84896

Interaction Between Uranium Hexafluoride and Ammonia

S/089/60/008/006/022/023/XX
B006/B063

The thermal effect of the reaction was measured with a calorimeter shown in Fig.3:

1 - Dewar, 2 - outer wall of the calorimeter, 3 - inner wall of the calorimeter, 4 - mixer, 5 - heater, 6 - sleeve pipe made of heat-insulating material, 7 - distributor made of ebonite, 8 - quartz ampoule filled with liquid NH_3, 9 - solid UF_6, 10 - resistance thermometer, 11 - reaction bomb, 12 - heat insulator, 13 - NH_3 vaporizer, 14 - solutions of NH_4Cl, NaCl, $ZnSO_4$, $CaCl_2$, etc.

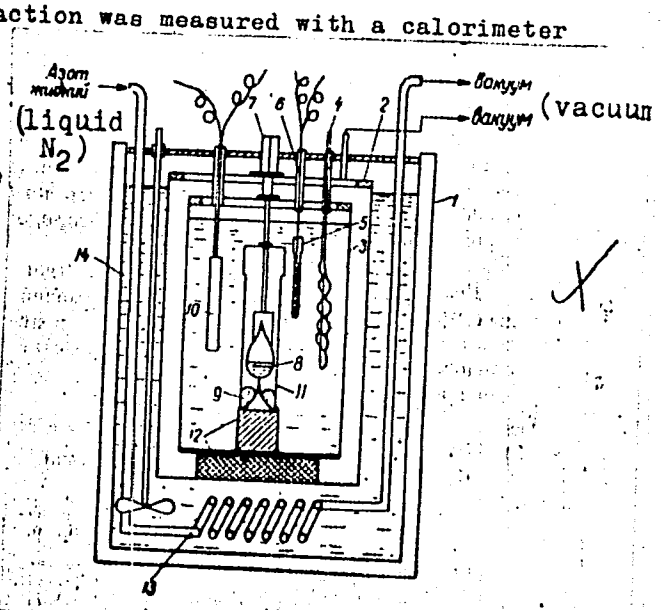


Fig.3

Card 4/6

84896

Interaction Between Uranium Hexafluoride and Ammonia

S/089/60/008/006/022/023/XX
B006/B063

The results of a chemical analysis of the solid reaction products are collected in Table 1:

Table 1

Reaction temperature	Degree of U-reduction %	Content of the components of the reaction products			
		U		F	NH_3
−50	50,9	61,3	30,5	7,8	
−40	50,3	60,8	31,3	7,6	
−30	50,6	61,6	30,4	7,7	
−20	59,5	60,2	32,5	6,9	
−15	64,4	58,7	33,9	7,2	
−10	71,4	59,8	33,1	7,1	
−5	73,8	60,0	32,8	6,8	
0	77,5	62,0	30,2	[illegible]	
+15	77,6	62,2	31,0	[illegible]	
+25	77,7	63,2	29,7	[illegible]	
+100	98,7	61,6	29,1	9,2	
+150	99,1	62,0	29,3	8,9	
+200	99,5	62,2	29,0	8,7	

Card 5/6

84896

Interaction Between Uranium Hexafluoride and Ammonia

S/089/60/008/006/022/023/XX
B006/B063

The entire reaction within the range -50 - -30°C can thus be described by equation $6UF_6 + (8+6n)NH_3 \longrightarrow UF_5 nNH_3 + 6NH_4F + N_2$, where n = 0.73. The following equations hold in the ranges 0 - +25°C and 100 - 200°C, respectively: $4UF_6+8NH_3 \longrightarrow 2UF_5+2NH_4UF_5+4NH_4F + N_2$ and $3UF_6+8NH_3 \longrightarrow 3NH_4UF_5+3NH_4F+N_2$. The calculated values are all compared with the experimental ones. The thermal effect observed between -50 and -30°C varies from 50.8 to 83.6 kcal/mole (cf. Table 2); at -40°C, it coincides with the value calculated from the reaction equation. Within the range -20 to +20°C, the reaction rate was measured as a time function (Fig.4). The functions (-20°, 0°, +20°C) are hyperbolic. There are 4 figures, 5 tables, and 9 references: 3 Soviet, 1 US, 2 German, and 1 British.

SUBMITTED: July 15, 1959

Card 6/6

GALKIN, N.P.

Metallurgy of uranium. Atom.energ. 9 no.4:270-281 O '60.
(MIRA 13:9)
(Uranium--Metallurgy)

84223
S/089/60/009/004/003/020
B006/B070

21.3200

AUTHORS: Stepanov, M. A., Galkin, N. P.

TITLE: The Solubility Product of the Hydroxide of Tetravalent Uranium

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 4, pp. 282 - 285

TEXT: The present work gives a calculation of the solubility product of uranium (IV) hydroxide. An exact knowledge of the solubility product is necessary for a rational processing of uranium. In the introduction, the authors discuss results of some related papers (Refs. 1-8). Then, they discuss the determination of experimental data necessary for the calculation. The starting material was a solution in hydrochloric acid of uranium (IV) which was kept in a retort in a pure atmosphere of argon. Even after 15 days no oxidation of the uranium was observed. The concentration was measured titrimetrically with potassium bichromate. It was 0.590 M in relation to uranium and 1.02 M in relation to HCl. Solutions of ammonium hydroxide, sodium hydroxide, and potassium hydroxide (0.464, 1.992, 2.184 N, respectively) were used as precipitants. The pH

84223

The Solubility Product of the Hydroxide of Tetravalent Uranium

S/089/60/009/004/003/020
B006/B070

determination was made with a glass electrode three and eight minutes after the addition of the precipitant. In order to keep the free alkali content in the solution low, the experiment was interrupted when pH attained a value of 7 - 9. The dependence of pH on the amount of the added precipitant is graphically shown (Fig.). It was found that the formation of uranium hydroxide begins in a solution with $5.75 \cdot 10^{-3}$ g.ion/l U(IV) and $3.28 \cdot 10^{-2}$ Cl at pH = 2.38. All pH-measurements were made with a tube potentiometer of the type ЛП-5 (LP-5) which could accurately determine the activity of hydrogen ions up to ±0.05 unit. The calculation of the active concentration of the quadruply charged U(IV) ion during hydrolysis, made on the basis of the results of acidimetric titration, led to the value of $(1.10 \pm 0.72) \cdot 10^{-52}$ for the solubility product of the uranium (IV) hydroxide. There are 1 figure and 24 references: 20 Soviet, 3 US, and 1 Scandinavian.

SUBMITTED: March 18, 1960

Card 2/2

GALKIN, N.P.; PONOMAREV, L.A.; SHISHKOV, Yu.D.; PODOSHVINA, V.A., red.; VLASOVA, N.A., tekhn. red.

[Plutonium hexafluoride, its preparation and properties] Geksaftorid plutoniia, ego poluchenie i svoistva. Moskva, Gos.izd-vo lit-ry v oblasti atomnoi nauki i tekhniki, 1961. 34 p. (MIRA 15:2)

(Plutonium fluoride)

PHASE I BOOK EXPLOITATION SOV/5820

Galkin, N. P., A. A. Mayorov, U. D. Veryatin, B. N. Sudarikov, N. S. Nikolayev, Yu. D. Shishkov, A. B. Krutikov

Khimiya i tekhnologiya ftoristykh soyedineniy urana (Chemistry and Technology of Uranium Fluoride Compounds) Moscow, Gosatomizdat, 1961. 347 p. Errata slip inserted. 4500 copies printed.

Ed. (Title page): N. P. Galkin, Doctor of Technical Sciences, Professor; Ed.: N. A. Korobtsova; Tech. Ed.: S. M. Popova.

PURPOSE: This book is intended for chemical and nuclear engineers and teachers and students of schools of higher education.

COVERAGE: The monograph reviews Soviet and non-Soviet literature published up to June 1960 on the physicochemical properties of uranium fluorides and methods of producing them from salts, oxides, and metallic uranium. Methods of processing uranium chemical concentrates to the tetra- and hexafluorides, which are initial products in the production of nuclear fuel,

Card 1/3

are of primary interest. Fluoride methods are preferred to hydrometallurgical methods because radioactive waste solutions in the former are either reduced to a minimum or eliminated. No personalities are mentioned. References accompany individual chapters.

TABLE OF CONTENTS:

GALKIN, N.P.; MAYOROV, A.A.; SHUBIN, V.A.; POLUEKTOVA, G.B.; KRYLOV, A.S.

Composition of precipitates forming in the reaction of ammonia with aqueous solutions of uranyl sulfate or nitrate. Zhur.neorg.khim. 6 no.10:2319-2324 O '61. (MIRA 14:9)

(Uranyl sulfate) (Uranyl nitrate) (Ammonia)