SHINSKIY, O.M.

Thymol test in syphilis. Vest.ven. i derm.no.3:50-51 My-Je '56.
(MIRA 9:9)
1. Iz Bashkirskogo kozhno-venerologicheskogo instituta (dir. P.N.Shishkin)
(SYPHILIS, physiology,
liver, thymol turbidity test (Rus))
(LIVER FUNCTION TESTS, in various diseases,
thymol turbidity test in syphilis (Rus))

SHINSKIY G.E.

IL'YASOV, I.Z.; VEVER, R.E.; SHINSKIY, G.E.

Serum proteins in syphilis during modern therapy [with summary in English]. Vest.derm. i ven. 31 no.3:27-31 My-Je '57. (MIRA 10:11)

1. Iz kafedry biokhimii (zav. - dotsent I.Z.Il'yasov) Bashkirskogo meditsinskogo instituta (dir. - dotsent N.F.Vorob'yev) i Bashkirskogo kozhno-venerologicheskogo instituta (nauchnyy rukovoditel' - prof. G.S.Maksimov, direktor P.N.Shishkin)
(SYPHILIS, blood in,
proteins, eff. of ther. (Rus))

SHINSKIY, O.E.

Functional state of the liver during the Vedrov-Studnitsin method of penicillin-pyrotherapy in syphilis. Vest.derm. i ven. 32 no.3: 23-26 My-Je '58 (MIRA 11:7)

1. Iz Ufimskogo nauchno-issledovatel'skogo kozhno-venerologicheskogo instituta (direktor P.N. Shishkin).

(LIVER, in var. dis.
syphilis, eff. of penicillin with fever ther. (Rus))
(PENICILLIN, ther. use
syphilis, with fever, ther. eff. on liver (Rus))
(SYPHILIS, ther.
fever with penicillin, eff. on liver (Rus))
(FEVER THERAPY, in var. dis.
syphilis with penicillin (Rus))

SHINSKIY, G.M., kand.med.nauk; GABITOVA, R.G., nauchnyy sotrudnik; MEYSHTADT, Ya.S.

Vaccinal exzema. Vrach.delo no.12:1323-1325 D '59.
(MIRA 13:5)

1. Ufimskiy kozhno-venerologicheskiy institut i Ufimskiy institut vaktsin i syvorotok.
(EXZEMA) (SMALLPOX)

SHINSKIY, G.Ye.

Familial chronic benign pemphigus. Vest. derm. i ven. 34 no.4: 65-67 '60. (MIRA 13:12)

(PEMPHIGUS)

SHINSKIY, G.E., kand.med.nauk; VEVER, R.E.; GALANOVA, G.V., SIDOROVA, ...; mladshiy nauchnyy sotrudnik; ZAPROMETOVA, A.P., mladshiy nauchnyy sotrudnik; CHIBIRIAIEVA, A.D., mladshiy nauchnyy sotrudnik

Protein composition of the blood in patients with some dermatoses. Vest.derm.i ven. no.7:21-27 '61. (MIRA 15:5)

1. Iz Ufimskogo kozhno-venerologicheskogo instituta (dir. - starshiy nauchnyy sotrudnik P.N. Shishkin, nauchnyy rukovoditel' - starshiy nauchnyy sotrudnik G.E. Shinskiy).
(SKIN--DISEASES) (BLOOD PROTEINS)

SHINSKIY, O. E.; TELEGINA, K. A.; SHEKHOVTSOVA, V. N.

Use of vitamin E in treating lupus erythematosus. Vest. derm. i ven. 36 no.7:64-66 Jl '62. (MIRA 15:7)

1. Iz Ufimskogo kozhno-venerologicheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. P. N. Shishkin, nauchnyy rukovoditel' O. E. Shinskiy)

(LUPUS ERYTHEMATOSUS) (TOCOPHEROL)

O. E. is correct - journal checked KF

SHINSKIY, G.E.

Local treatment of lupus erythematosus with hydrocortisone injections. Sov.med. 26 no.12:109-111 D '62. (MIRA 16:2)

1. Iz Ufimskogo nauchno-issledovatel'skogo kozhno-venerologicheskogo instituta (dir. P.N. Shishkin; konsul'tant raboty - prof. N.M. Smelov).

(LUPUS ERYTHEMATOSUS) (CORTICOSTERONE)

SHINSKIY, G.E.

Clinical manifestations of cryoglobulinemia. Vest. derm. i ven. 37 no.4:32-36 Ap '63. (MIRA 17:5)

1. Ufimskiy kozhno-venerologicheskiy institut (dir. P.N. Shishkin).

SHINSKIY, G.E., kand. med. nauk; VEVER, R.E., kand.med.nauk; CHIBIRYAYEVA, A.D.; ZAPROMETOVA, A.P.

Functional state of the liver in lupus erythematosus. Vest. derm. i ven. 37 no.9:14-16 S '63. (MIRA 17:6)

1. Ufimskiy kozhno-venerologicheskiy institut (dir. P.N. Shishkin) Ministerstva zdravookhraneniya RSFSR.

SHINSKIY, G.E.; MIKHAYLOVA, Ye.A.; SHEKHOVTSOVA, V.N , FEL'DMAN, I.Ye.; GABITOVA, R.G.; TELEGINA, K.A.

Experience with outpatient service in lupus erythematosus. Sov. med. 27 no.1:151-153 Ja '64. (MIRA 17:12)

1. Ufimskiy kozhno-venerologicheskiy institut (direktor P.N. Shishkin nauchnyy rukovoditel' G.E. Shinskiy, konsul'tant - prof. N.S. Smelov).

SHINSKIY, G.E.; LEVKOV, A.A.; KALAMKARYAN, A.A.

Benign lymphadenosis of the skin. Vest. derm. i ven. no.1: 9-16 '65. (MIRA 18:10)

1. Ufimskiy nauchno-issledovatel'skiy kozhno-venerologicheskiy institut (dir. P.N. Shishkin) Ministerstva zdravookhraneniya RSFSR i otdel dermatologii (zav.- prof. N.S. Smelov) TSentral'nogo nauchno-issledovatel'skogo kozhno-venerologicheskogo instituta (dir.- N.M. Turanov) Ministerstva zdravookhraneniya SSSR, Moskva.

VEKSEL', M.; SHINSKIY, G.L.; SIDOROVA, V.N.; MAR'YASIS, Kh.D.; LEVKOV, A.A.; VEDERNIKOV, V.A.

Abstracts. Vest. derm. i ven. 37 no.4:77-82 Ap '63.
(MIRA 17:5)

5(3)
AUTHORS: Boldyrev, V. V., Dolgova, V. P., Shint, A. A. SOV/153-59-1-6/34

TITLE: Investigation of the Aging Process of Lead Oxalate (Issledovaniye protsessa stareniya oksalata svintsa)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 24 - 27 (USSR)

ABSTRACT: Previous papers (Ref 1, Ref 2) showed that the rate of thermal decomposition of lead oxalate depends on the time which has passed since the production of the preparation. Fresh lead oxalate decomposes faster than aged lead oxalate. The variation of the decomposition constants depending on temperature (Diagram, Fig 1) is investigated in this paper. The decomposition constant was calculated according to the equations $1-a = e^{-Ktn}$ and $K = nK^{\frac{1}{n}}$ on the basis of the values determined. K decreases with a rise of temperature and aging whereas the exponent n shows an increase. The aging process can be described well by a topokinetic equation with the exponent n near 1. n=1 denotes a reaction of the first order in which the reactio..

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Investigation of the Aging Process of Lead Oxalate SOV/[illegible]

rate is proportional to the portion of the substance not yet reacting. This might also hold for the aging process which is based on the elimination of metastable lattice defects. In this case the reaction rate must be proportional to the number of defects still present at the respective moment. If lead oxalate is treated with ultrasonics the aging process is accelerated. In this case linear dislocations are eliminated in the same gliding surface which is known as "polygonization". These processes take place also at low temperatures and with little energy expenditure. There are 2 figures, 1 table, and 9 references, 5 of which are Soviet.

ASSOCIATION: Kafedra neorganicheskoy khimii Tomskogo gosudarstvennogo universiteta im. V. V. Kuybysheva (Chair of Inorganic Chemistry of Tomsk State University imeni V. V. Kuybyshev)

SUBMITTED: June 23, 1958

Card 2/2

L 24520-66 EWT(1)/T JK

ACC NR: AP6009527 (N) SOURCE CODE: UR/0413/66/000/005/0049/0049

INVENTOR: Bardyshev, I. I.; Rysev, M. A.; Shint, A. A.; Kanykina, T. D.; Parmon, A. I.; Geller, A. A. 25 B

ORG: none

TITLE: Method of stabilization of sticky material [announced by the Institute of Physical and Organic Chemistry AN BSSR (Institut fiziko-organicheskoy khimii AN BSSR)] Class 22, No. 179407

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 5, 1966, 49

TOPIC TAGS: insect control, stabilization

ABSTRACT: An Author Certificate has been issued for a method of stabilizing sticky material containing colophony for insect control. To increase the stability of the material, the colophony is modified at 170 to 300C with 0.5--2% zinc chloride. [NT] 6

SUB CODE: 11, 07/ SUBM DATE: 22Jan65/

Card 1/1 BLG UDC: 547.914.2-171:632-952

CZECHOSLOVAKIA / Human and Animal Morphology (Normal and Pathological). Blood-Vascular System. Vessels. S-5

Abs Jour: Ref Zhur-Biol., No 17, 1958, 79130.

Author : Shintay, M., Jakubcova, I.
Inst : Not given.
Title : Evaluation of the Anatomical and Functional Changes After Ligature of the Ductus Arteriosis Botalli.

Orig Pub: Bratisl. lekar. listy, 1957, 1, No 11, 641-647.

Abstract: In children with persistent ductus arteriosis Botalli, indications decreased on a velocipede ergometer to (30% of of the norm. in the period of puberty). After the ligation of the ductus arteriosis Botalli, the indications increase significantly for a half year, and in the second year can achieve the level of healthy children.

Card 1/1

SHINTL'MEYSTER, I.; PUMPER, Ye.Ya., red.; IOFE, Yu.M., red.; MURASHOVA, N.Ya., tekhn.red.

[Electron tube as a device for physical measurements] Elektronnaia lampa kak pribor dlia fizicheskikh izmerenii. Moskva, Gos.izd-vo tekhniko-teoret.lit-ry, 1959. 343 p. (MIRA 12:12)
(Electron tubes) (Electric measurements)

SHINTSER, L.M., kandidat tekhnicheskikh nauk.

Power transformers having aluminum windings. Vest. elektroprom. 28 no.4:43-46 Ap '57. (MLRA 10:6)

1. Moskovskiy transformatornyy zavod.
(Electric transformers)

SHINYAKOV, L. I.

Bus depots made of slag concrete. Avt. dor. 18 no.3:30 My-Je '55.
(Motor bus lines--Stations) (MLRA 8:9)

BOGDANOV, O.S., doktor tekhnicheskikh nauk, professor, redaktor; BRAND, V.Yu., kandidat tekhnicheskikh nauk, redaktor; DERKACH, V.G., kandidat tekhnicheskikh nauk, redaktor; DOLIVO-DOBROVOL'SKIY, V.V., doktor tekhnicheskikh nauk, redaktor; ZAKHVATKIN, V.K., redaktor; KACHAN, I.N., kandidat tekhnicheskikh nauk, redaktor; OLEVSKIY, V.A., kandidat tekhnicheskikh nauk, redaktor; LOKONOV, M.F., kandidat tekhnicheskikh nauk, redaktor; PARFENOV, A.M., kandidat tekhnicheskikh nauk, redaktor; PODNEK, A.K., redaktor; POLIVANOV, K.Yu., redaktor; FINKEL'SHTEYN, G.I., kandidat tekhnicheskikh nauk, redaktor; FOMIN, Ya.I., kandidat tekhnicheskikh nauk, redaktor; SHINYAKOV, [redacted] redaktor; YUDENICH, G.I., doktor tekhnicheskikh nauk, redaktor; BYKOV, G.P., redaktor; YEZDOKOVA, M.L., redaktor izdatel'stva; EVENSON, I.M., tekhnicheskiy redaktor

[Proceedings of the Third Scientific Session of the Institute of Mechanical Processing of Economic Minerals] Trudy III nauchno-tekhnicheskoi sessii instituta Mekhanobr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1955. 758 p. (MLRA 10:8)

1. Leningrad. Nauchno-issledovatel'skiy i proyektnyy institut mekhanicheskoy obrabotki poleznykh iskopayemykh
(Ore dressing) (Flotation)

KISELEV, B.K., otv.red.; SHINYAKOV, M.I., red.; SKPP, A., tekhn.red.

[Sintering finely pulverized concentrates of Krivoy Rog iron-bearing rock] Agloneratsiia tonkoizmel'chennykh kontsentratov zhelezistykh porod Krivogo Roga. Leningrad, Izd-Biuro tekhn. inform. In-ta mekhanobr, 1956. 60 p. (Leningrad. Nauchno-issledovatel'skii i proektnyi institut mekhanicheskoi obrabotki poleznykh iskopaemykh. Trudy, no.97) (MIRA 13:6)
(Sintering) (Krivoy Rog--Iron ores)

AUTHOR: KHARASH,L.I., SHINYAKOV,M.I., ELIASBERG,S.I. PA - 2392
"Mekhanobr" Institute.

TITLE: The Problems of Sinter Production. (Problemy aglomeratsionnogo proizvodstva, Russian).

PERIODICAL: Stal', 1957, Vol 17, Nr 2, pp 106 - 114 (U.S.S.R.)
Received: 5 / 1957 Reviewed: 5 / 1957.

ABSTRACT: In connection with the gradual exhaustion of the rich ore deposits and an increase of the yield of poorer deposits, the great quantities of ore have now been subjected to the processes of agglomeration and sintering. At present the developments resulted in the feed of only two raw materials: the agglomerate and the coke (instead of 4). It is shown that it is most useful to build a sintering area of 200 qm in the case of new constructions. The "Mekhanobr" Institute developed this project of such a plant and made the following demands: perfection of the technological sintering-process, improvement of the construction of the plant, far-reaching automation of production, decrease of cost price. The following items are then dealt with: the imperfections of the present sintering-plants; the new technological scheme where the averaging of the charge, the dosing of the fuel, the heating of the charge, and the cooling of the charge layer are described; constructional solutions for the plant, the new equipment, and the technical economic indices. Completion of such an experimental plant

Card 1/2

PA - 2392

The Problems of Sinter Production.

and the construction of new machinery for the sintering process in 1958 - 1960 are demanded. (2 tables, 5 illustrations and 4 citations from publications in Slav language).

ASSOCIATION: Not given.
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress.

YAVZEHOVA, Ye.K. ; SHIMYANSKAYA, Ts.Ya.

Treatment of infectious diseases of the nervous system by massive doses of vitamin B_1 and the peculiarity of its action on pain syndrome. Vrachebnoe delo 27, 587-92 (columns, not pp.) '47.
(CA 47 no.21:11537 '53)

BOYARCHENKOV, Mikhail Aleksandrovich; ROZENBLAT, Moisey Aronovich; SHINYANSKIY, A.V., red.; MANIN, I.A., otv. za vypusk; SUKHAREVA, R.A., tekhn.red.

[High-speed reversible electric drives with magnetic amplifiers] Bystrodeistvuiushchie reversivnye elektroprivody s magnitnymi usiliteliami. Moskva, 1959. 40 p. (Moskovskii dom nauchno-tekhnicheskoi propagandy. Peredovoi opyt proizvodstva. Seriia: Elektroenergetika, vyp. 1). (MIRA 13:11)
(Electric driving) (Magnetic amplifiers)

SHINYANSKIY, A.V.

PHASE I BOOK EXPLOITATION SOV/4802

Bulgakov, Aleksey Alekseyevich, Mikhail Mikhaylovich Sokolov, and Aleksandr Viktorovich Shinyanskiy

Avtomatizirovannyy elektroprivod (Automated Electric Drive) Moscow, 1959. 69 p. (Series: Moskovskiy dom nauchno-tekhnicheskoy propagandy. Peredovoy opyt proizvodstva. Seriya: Elektroenergetika, vyp. 3) 5,000 copies printed.

Sponsoring Agencies: Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR; Moskovskiy dom nauchno-tekhnicheskoy propagandy imeni F.E. Dzerzhinskogo.

Ed.: A.A. Tayts; Resp. Ed. for this book: G.G. Yatsenko; Tech. Ed.: R.A. Sukhareva.

PURPOSE: This booklet is intended for technical personnel concerned with the automation of electric drives.

COVERAGE: The article by A.A. Bulgakov entitled "Electronically Controlled Adjustable D-C and A-C Electric Drive" presents a detailed description of the various devices used in the automation of electric drives. The article by

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Automated Electric Drive

SOV/4802

M.M. Sokolov and A.V. Shinyanskiy entitled "Adjustable Induction Electric Drive With Saturable Reactors in the Stator Circuit" contains a detailed description of this type of automated drive. The authors conclude that the latter drive has certain definite advantages in a number of low-power production processes, as it assures the adjustment of rotation speed within given limits during steady operation in the whole range. No personalities are mentioned. References accompany both articles.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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JP/rm/mas
2-15-61

BOYARCHENKOV, Mikhail Aleksandrovich; SHIMYANSKIY, Aleksandr Viktorovich; ROZMAN, Ya.B., red.; BORUNOV, N.I., tekhn.red.

[Magnetic amplifiers] Magnitnye usiliteli. Moskva, Gos.energ. izd-vo, 1960. 54 p. (Biblioteka elektromontera, no.30)
(MIRA 14:3)

(Magnetic amplifiers)

26.2194

S/196/63/000/001/033/035
E194/E155

AUTHORS: Sokolov, M.M., Shinyanskiy, A.V., and Masandilov, L.B.

TITLE: A pick-up for measuring the acceleration of rotating shafts

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, no.1, 1963, 5-6, abstract 1 K 29. (Tr. Mosk. energ. in-ta, no.38, 1962, 87-96)

TEXT: The construction and theory of a strain-gauge accelerometer for measuring angular acceleration and dynamic torques on motor shafts is described. There are two measuring wafers each with a resistance strain gauge attached. One end of each is firmly fixed to a sleeve mounted on the motor shaft (or to a lay-shaft). The other end of each wafer is connected through a holder to an inertia disc mounted on a rolling bearing. The resistance change of the strain gauge is, within certain limits, directly proportional to the strain of the wafer. The following equation is derived for the relative change in resistance of the strain gauge:

$$(d^2\varepsilon_R/dt^2) + \omega_o^2\varepsilon_R = H M_{ДВ}(t) ;$$

Card 1/2

where: ε_R is the relative strain of the wafer; ω_o is the natural angular frequency of oscillation of the accelerometer; H is a magnitude which depends on the dimensions and modulus of elasticity of the wafer material; and $M_{ДВ}(t)$ is the dynamic torque of the motor. The instrument measures the relative change in resistance of the pick-up caused by the sum of the oscillations, and each component of the oscillation has its own phase error and amplitude distortion. The accelerometer can be used to record the dynamic torque curve on the shaft during both rapid and gradual changes in torque. The natural frequency of the accelerometer should exceed the frequency of forced oscillation by at least a factor of 10.

[Abstractor's note: Complete translation.]

Card 2/2

SOKOLOV, M.M., doktor tekhn. nauk (Moskva); SHINYANSKIY, A.V., inzh. (Moskva); MASANDILOV, L.B., inzh. (Moskva)

Technological and economic basis for the application of induction motor drives with saturable reactor control in various fields. Elektrichestvo no.11:31-35 N '63. (MIRA 16:11)

SOKOLOV, Mikhail Mikhaylovich, doktor tekhn. nauk, prof.; SHLYANDIN, Aleksandr Viktorovich, assistent; MUSANDRIN, Lev Borisovich

Torque limitation in the start of a short-circuited asynchronous motor. Izv. vys. ucheb. zav.; elektromekh. [illegible] '64. (MIRA 17:10)

1. Kafedra elektrooborudovaniya promyshlennykh predpriyatiy Moskovskogo energeticheskogo instituta (for Sokolov, Shlyandin).
2. Starshiy inzhener problemnoy laboratorii elektrosnabzheniya Moskovskogo energeticheskogo instituta (for Musandrin).

CHILIKIN, Mikhail Grigor'yevich; SOKOLOV, Mikhail Mikhaylovich; SHINYANSKIY, Aleksandr Viktorovich; MILOVZOROV, V.I., kand. tekhn. nauk, retsenzent; IL'INSKIY, N.F., kand. tekhn. nauk, red.

[Asynchronous electric drive with saturable reactors] Asinkhronnyi elektroprivod s drosseliami nasyshcheniia. Moskva, Energiia, 1964. 239 p. (MIRA 17:12)

[illegible], Vladimir Mikhailovich; [illegible], A.V., red.

[Electrodynamic modeling of electric drives] Elektrodinamicheskoe modelirovanie elektroprivodov. Moskva, Energiia, 1964. 87 p. (MIRA 17:9)

SOKOLOV, M.M., doktor tekhn.nauk, prof.; MASANDILOV, I.B., inzh.; SHNIANSKIY, A.V., inzh.

Study of the electromagnetic transients of asynchronous motors. Elektrichestvo no.12:40-45 D '65. (MIRA 18:12)

1. Moskovskiy energeticheskiy institut.

SOKOLOV, Mikhail Mikhaylovich; LIPATOV, Dmitriy Nikitich; SHINYANSKIY, A.V., red.

[Electric drives and electric power supply of industrial enterprises] Elektroprivod i elektrosnabzhenie promyshlennykh predpriiatii. Moskva, Energiia, 1965. 440 p. (MIRA 18:8)

SOKOLOV, M.L., doktor tekhn.nauk, prof.; SHKHARSKIY, A.V., inzh.

Asynchronous choke controlled electric drives in the chemical industry. Elektrotekhnika 36 no.11:12-14 N '65.
(MIRA 18:11)

SOR[illegible], [illegible], [illegible] nauk; [illegible], [illegible], inzh.; SHINYA[illegible]

[illegible]perimental study of the electromagnetic transients of unified A-series induction motors. Elektrichestvo no.8:20-25 Ag '65. (MIRA 18:9)

1. [illegible] energeticheskiy institut.

KONONYUK, G.Ya.; SHINYANSKIY, K.A.

Cattle trichomoniasis control on the farms of Donetsk Province. Veterinariia 39 no.11:25-28 N '62. (MIRA 16:10)

1. Direktor Donetskoy oblastnoy veterinarno-bakteriologicheskoy laboratorii (for Kononyuk). 2. Zaveduyushchiy otdelom parazitologii Donetskoy oblastnoy veterinarno-bakteriologicheskoy laboratorii (for Shinyanskiy).

SHIMANSKIY, L. A.

"Inversion Phenomena in Crystalline Detectors at Ultra-High Frequencies," Zhur. Eksper. i Teoret. Fiz., No. 10, 1940. Mbr., Chair, Physics, 2nd Med. Inst., Khar'kov, -1939-.

SHINYANSKIY, L. A.

USSR/Physics - Ultrasonics Jan 53

"Measurement of the Propagation Velocity of Ultrasonic Waves in Rubber," N.F. Otpushchennikov and L. A. Shinyanskiy

Zhur Tekh Fiz, Vol 23, No 1, pp 32-35

Used the wedge method to measure the propagation velocity of longitudinal ultrasonic oscillations in rubber-like materials. Measured the velocity in several rubber samples. Measurements were made at a frequency of 3,225 kc. Submitted 10 June 52.

267T94

USSR

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001549520001-4"

SHINYANSKIY, L.A.

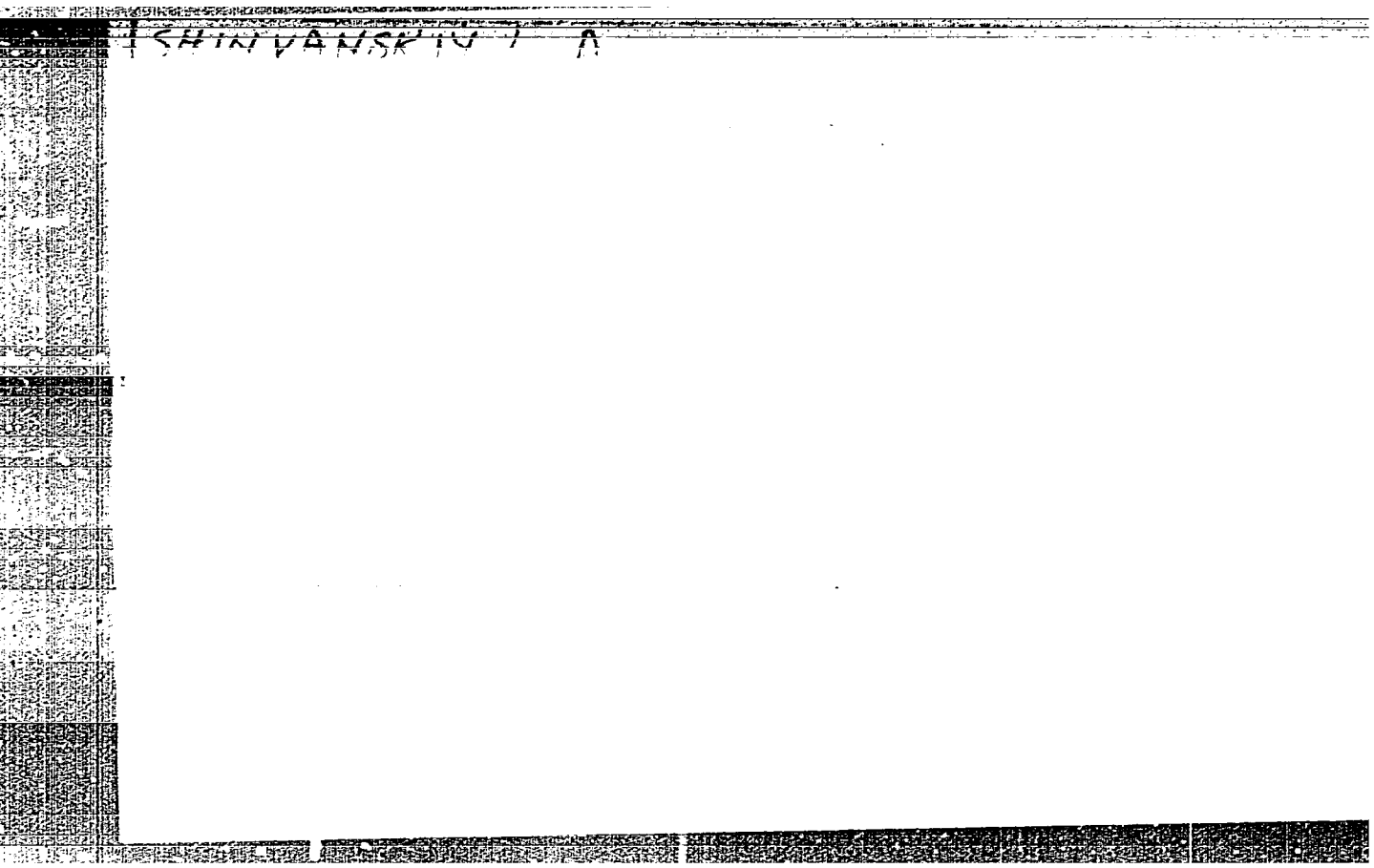
SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1560
AUTHOR ŠINJANSKIJ, L.A., SOLON'KO, V.N.
TITLE The Absorption of Ultrasonic Oscillations as a Characteristic of the Elastic Properties of Rubber.
PERIODICAL Zurn. techn. fis, 26, fasc. 10, 2302-2302 (1956)
Issued: 11 / 1956

In the present work previous investigations of this dependence (L A ŠINJANSKIJ, Žurn. techn. fis, 24, 851 (1954)) were continued up to the point of the breaking of the samples. Measurings were carried out at room temperatures and at 2500 kc. Several mixtures which had been produced by various kinds of vulcanization processes were examined.
The characteristic properties of rubber are satisfactorily explained if the conception of flexible chainlike molecules, which are formed by the transversal connections of a spatial lattice is taken as a basis. The individual parts (segments) of the molecular chains of the not deformed rubber are irregularly orientated. In literature these parts are considered as mechanical "dipoles" which endeavor to orientate themselves in the direction of the exterior deforming forces. Herefrom the conclusion is drawn that the deformation of rubber may be looked upon as a "phenomenon of mechanical polarization"
In the case of a onedimensional extension, a deformation law is derived which agrees with experimental data within the total domain of extension until breakage occurs. "Mechanical polarization" is accompanied by a modification of the order of molecular chains, and these modifications increase the absorption

Žurn. techn. fis, 26 fasc. 10. 2302-2302 (1956) CARD 2 / 2 PA - 1560

of ultrasonic oscillations.
The influence exercised by extension on the absorption coefficient is shown in a diagram. The characteristic shape of the curves makes it possible to draw conclusions concerning the occurrence and the development of the crystalline phase in the samples investigated. The diagram shows that within a wide range of relative length absorption increases with an increase of the duration of the process of vulcanization.
The data available lead to the conclusion that the absorption coefficient of ultra sound may serve as a characteristic of the degree of crystallization of rubber and its mechanical properties. The tensions and strains occurring on the occasion of the deformation of rubber can be compared with the corresponding values of the absorption coefficient of the ultrasonic oscillations.

INSTITUTION:



KAZARNOVSKIY, L.S.; SHINYANSKIY, L.A.

Influence of ultrasound on liquid aqueous extracts. Med.prom. 14 no.3:38-41 Mr '60. (MIRA 13:6)

1. Khar'kovskiy farmatsevticheskiy institut.
(ULTRASONIC WAVES--PHYSIOLOGICAL EFFECT)
(DRUGS--PRESERVATION)

ZIKOVA, N.Ya. [Zykova, N.IA.]; KAZARNOVSKIY, L.S. [Kazarnovs'kyi, L.S.]; SOLON'KO. V.N.; SHINYANSKIY, L.A. [hynians'kyi, L.A.]

Preparing extracts with the use of ultrasonic waves. Farmatsev. zhur. 16 no.4:15-16 '61. (MIRA 17:6)

1. Khar'kovskiy farmatsevticheskiy institut.

article. The adrenals of cattle were reduced to fine parti[illegible] and then [illegible] with 95 percent alcohol in a ratio of 1:2. The

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with dichloroethane; the aqueous part was filtered with ammonium added
the filtrate. Fine crystals of adrenalin were obtained. Tests gave

Card 2/2

SHINYAYEV, A. Ya.

3936* Diffusion of Iron Into Nickel. (Russian.) M. B. Neiman, A. Ya. Shinyaev, and B. C. Drantsev. *Doklady Akademii Nauk SSSR*, v. 91, no. 2, July 11, 1953, p. 265-267.
Studies were made by following a new variant of tracer technique for determining diffusion in solid bodies. Graphs, table. 7 ref.

B. T. R.
V. 3 No. 3
Mar. 1954
Metals- Metallography--Transformations

SHIKHAYB, A. Ya.

"Investigating the Diffusion of Iron in Iron-Nickel and Iron-Molybdenum Alloys." Cand Phys-Math Sci, Inst of Chemical Physics, Moscow, 1954. (RZhKhim, No 5, Mar 55)

So: Sum. No 670, 29 Sept 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

USSR/Physical Chemistry

Card 1/1

Authors : Neyman, M. B., and Shinyaev, A. Ya.

Title : Use of electrolytic buffing for the removal of metal and alloy layers during the determination of diffusion coefficients

Periodical : Dokl. AN SSSR, 96, Ed. 2. 315 - 318, May 1954

Abstract : The method of removing metallic layers through electrolytic buffing enables a direct determination of the diffusion coefficients. Using a 60-% sulfuric acid solution and a lead cathode at a current of 5 - 7 a/cm^2 for a period of 10 seconds the authors obtained a glossy surface of the tested specimen and the removed layer had an uniform thickness of several microns. The uniformity of the removed layers was measured with an optical indicator. The measurements showed that the electrolytic buffing method warrants a constancy in the thickness of the removed layers. Four USSR references since 1937. Graphs.

Institution : Academy of Sciences USSR, Institute of Chemical Physics.

Presented by : Academician A. N. Frumkin, March 9, 1954

Evaluation B-81524

SHINYAYEV A Ya

USSR/Physics - Chemical physics

Card 1/2 Pub. 22 - 31/54

Authors : Neyman, M. B., and Shinyayev, A. Ya.

Title : Diffusion of iron in iron-nickel alloys

Periodical : Dok. AN SSSR 102/5, 969-972, Jun 11, 1955

Abstract : An investigation was conducted to determine the effect of component concentration on the magnitude of the diffusion coefficient in a binary system (Fe-Ni) characterized by the absence of intermetallic compounds. By determining the activation energy of the process of iron diffusion in different alloys of the Fe-Ni system it became possible to determine the change in magnitude of the energy barrier which must be overcome by the diffused atom during its migration from one node of the crystal lattice

Institution : Acad. of Sc., USSR, Inst. of Chem. Phys.

Presented by: Academician I. P. Bardin, January 8, 1955

Card 2/2 Pub. 22 - 31/54

Periodical : Dok. AN SSSR 102/5, 969-972, Jun 11, 1955

Abstract : of the alloy to another. The results are analyzed. Twelve references: 7 USA, 2 German and 3 USSR (1936-1954). Diagrams.

SHINYAYEV, A Ya.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 27/46

Authors : Neyman, M. B., and Shinyayev, A. Ya.

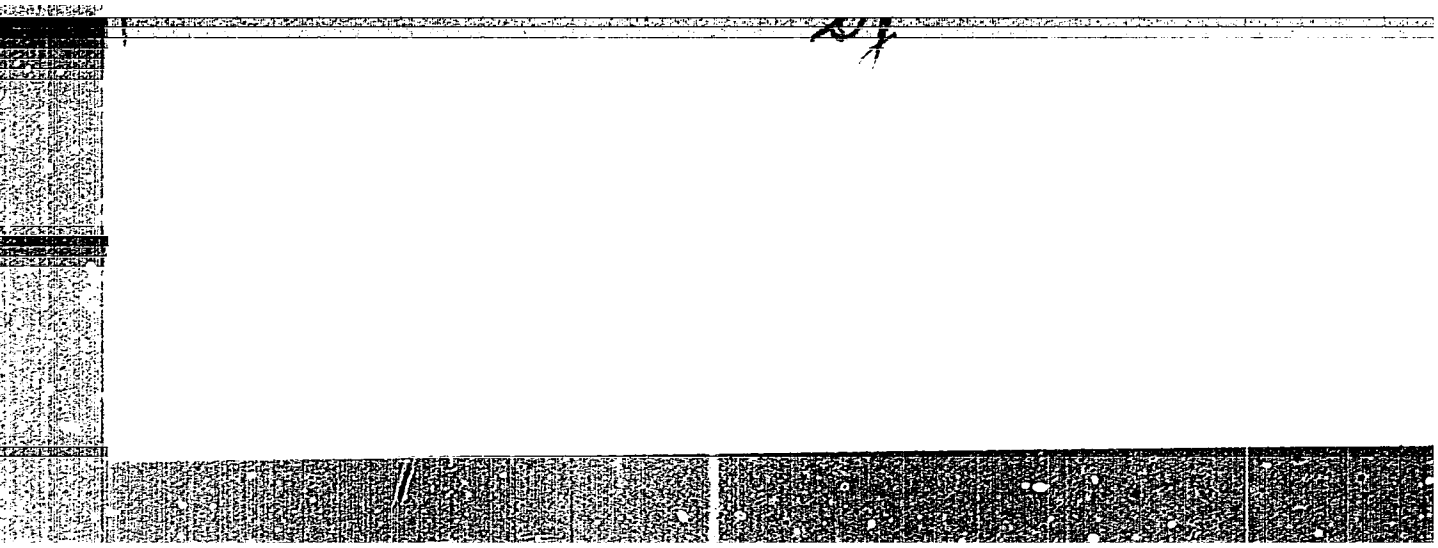
Title : The diffusion of iron in iron-molybdenum fusions

Periodical : Dok. AN SSSR 103/1, 101-104, Jul 1, 1955

Abstract : Studies were conducted to determine the coefficient of diffusion of iron in two different systems one of which is characterized by the formation of a chemical compound and the second as nonproductive. Results obtained during measuring the diffusion coefficients of Fe in Fe-Mo fusions at temperatures of 1106, 1148 and 1183° are described. The magnitude of the Fe diffusion coefficient was seen to be decreasing with the increase in percentage content of Mo and reaches a minimum at a point corresponding to the chemical composition of Fe_2Mo. The relation between the mobility of the diffusing atom and the chemical forces between the atoms in the crystal line lattice of the fusion is explained. Five references: 2 USA and 3 USSR (1948-1955). Graphs.

Institution : Acad. of Sc., USSR, Inst. of Chem. Phys.

Presented by : Academician I. P. Bardin, January 8, 1955



Shinyayev, A. Ya.

AUTHORS: Kornilov, I. I. and Shinyayev, A. Ya. (Moscow) 24-9-8/33

TITLE: On the relation between diffusion and heat resistance in alloys of the nickel system. (O svyazi mezhdu diffuziyey i zharoprochnost'yu v splavakh nikelevykh sistem).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.9, pp. 50-55 (USSR)

ABSTRACT: Measurement of the activation energy of the diffusion process is one of the methods of determining the energy of the bonds of the atoms in the crystal lattice of metals (Ref.5). In this paper some results are described of investigations based on physico-chemical conceptions of the relations between diffusion and heat resistance in alloys. The following systems of heat resistant alloys were investigated: binary (Ni-Ti), ternary (Ni-Ti-Cr) and quinary (Ni-Ti-Cr-W-Al); the alloys were prepared by L. I. Pryakhina. These systems were the subject of earlier investigations by one of the authors and his team (Refs. 2-4); it was shown in these papers that the heat resistance of alloys increased gradually with increase of the number of components. To avoid the influence of over-saturation of alloys by alloying additions, saturated solid solutions of the above mentioned systems were chosen;

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On the relation between diffusion and heat resistance in alloys of the nickel system.

in this state they had predominantly a polyhedric structure with a finely dispersed decomposition of the solid solution. All the selected alloys were subjected to homogenization annealing at 1200°C with subsequent reduction of the temperature to 800°C. To eliminate the influence of various concentrations of components on the diffusion characteristics, the authors selected as diffusing substances an element which does not directly enter into the investigated alloys. Furthermore, it was necessary that the diffusion coefficient of the diffusing element should be larger than the diffusion coefficient of any component of the alloy. Only with these conditions fulfilled is it possible to change the bond forces between the atoms of a crystal lattice on changing over from one alloy to another. These requirements are fulfilled by iron and for this purpose it is possible to use the radio-active Fe^{59}. The diffusion coefficient was measured by means of a method described earlier by one of the authors of this paper (Ref.9). The values of the diffusion coefficients were measured for iron in the selected alloys at temperatures

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On the relation between diffusion and heat resistance in alloys of the nickel system.

between 920 and 1250°C for diffusion times varying between 500 and four hours. Figs. 1 and 2 give the results relating to the specific activity a of the radio-active atoms of each of the removed layers as a function of the square of the distance of these layers from the specimen surface for 960 and 1218°C. The change in the diffusion coefficient on transition from the binary alloy to the ternary and quinary alloys at various temperatures is plotted in Fig.3. The graph, Fig.4, gives the temperature dependence of the coefficient of spatial diffusion of the iron in the investigated alloys. From the inclination angle of the experimental straight lines, given in Fig.4, the activation energy and the magnitude of the pre-exponential factor for the investigated alloys is entered in Table 1, p.53. Table 2 gives the high temperature strength of the investigated alloys in the range 1050 to 1330°C. It was found that the diffusion coefficients have the highest values for a binary alloy. At temperatures up to 1100°C the value of the diffusion coefficient is lowest for the quinary alloy but for temperatures above 1100°C the diffusion coefficient of

On the relation between diffusion and heat resistance in alloys of the nickel system.

quinary alloys is equal to that of ternary alloys and at even higher temperatures, of the order of 1200 to 1250°C, it becomes higher than the diffusion coefficient in the ternary alloy. The activation energy, calculated on the basis of the experimental data, amounted respectively to 73.1, 84.0 and 91.3 kcal/g-atom for the binary, ternary and quinary alloys of the nickel system. There are 4 figures, 2 tables and 10 references, all of which are Slavic.

SUBMITTED: April 29, 1956.

AVAILABLE: Library of Congress.

Card 4/4

D'YACHENKO, Petr Yefimovich,prof., doktor tekhn.nauk; DRITS, M.Ye., kand. tekhn.nauk, retsenzent; SHINYAYEV, A.Ya., kand.fiz.-mat.nauk, red.; BALANDIN, A.F., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Using radioactive isotopes in technology] Primenenie radioaktivnykh izotopov v tekhnike. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1958. 214 p. (MIRA 12:2)
(Radioisotopes--Industrial applications)

SHINYAYEV, A. Ya.

24-2-21/28

AUTHOR: Shinyayev, A. Ya. (Moscow).

TITLE: Investigation of the diffusion of alloys of the system nickel-chromium-titanium. (Issledovaniye diffuzii v splavakh sistemy nikel'-khrom-titan).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, No.2, pp. 143-145 (USSR).

ABSTRACT: In an earlier paper of Kornilov and the author (Ref.1) it was shown that the strength at elevated temperatures is directly related to the change of the magnitude of the diffusion coefficient. The investigations referred to were carried out on individual alloys of the nickel system and, therefore, the author considered it of interest to carry out a more detailed investigation of the diffusion in alloys of the nickel system so as to follow the changes in the diffusion characteristics as a function of the composition, the phase structure and the structure of the alloys. In this paper the results are given of diffusion studies in alloys of the system Ni-Cr-Ti as a function of the titanium content. Micro-structural, X-ray structural and other investigations have shown that in the case of a Cr content of 20 wt.% the solubility of titanium is 2.2 wt.% at temperatures up

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...urs, 1150°C for ... alloys
...gation of the ...ty-four hours and then
...or titanium contents up to ... micro-
...ution polyhedrons of a size
...served; if the titanium content was about
...ess phase was in the form of stretched out thin
...mellae. As the diffusing substance Fe^{59} was higher,
the diffusion coefficients D were measured by a method was used;

Investigation of the diffusion of alloys of the system nickel-chromium-titanium. 24-2-21/28

based on removing the surface layers by means of electrolytic polishing and measuring the radio-activity of the removed substance, whereby the measuring accuracy was 5 to 8%. The results obtained for the temperature range 995 to 1250°C are entered in a table, p.143 and graphed in Fig.1, p.144. In Fig.3 the diffusion characteristics and the high strength properties are compared; it can be seen that for the temperature range under consideration alloys with minimum values of the diffusion coefficient have the highest strength and the ranges of maximum strength and minimum diffusion show a similar dependence on the temperature. It is concluded that the high temperature strength is determined primarily by diffusion processes. Acknowledgments are made to Prof. I. I. Kornilov for his useful advice. There are 3 figures, 1 table and 4 references, all of which are Russian.

SUBMITTED: October 7, 1957.
ASSOCIATION: Institute of Metallurgy imeni A. A. Baykov Ac.Sc.USSR. (Institut Metallurgii im. A. A. Baykova AN SSSR).
AVAILABLE: Library of Congress.
Card 3/3

SHINYAYEV, A.Ya.

Connection between diffusion and heat resistance in alloys. Issl. po zharopr. splav. 3:97-108 '58. (MIRA 11:11)
(Heat-resistant alloys) (Diffusion)

78-3-3-19/47

AUTHOR: Shinyayev, A. Ya.

TITLE: On the Limits of Solubility (O granitse rastvorimosti)

PERIODICAL: Zhurnal Neoganicheskoy Khimii,1958,Vol.3, Nr 3,pp.655-658 (USSR)

ABSTRACT: A thorough investigation of the diffusion in the transitional region of the alloys was carried out. The investigations have the purpose of the explanation and the modification of the diffusion at the limit of the occurring phases. The diffusion process depends on the structure of the alloys and therefore the investigation of the diffusion in alloys is connected with the explanation of the modification of structure in the transitional regions of solid solutions in heterogeneous alloys. The diffusion processes were examined in the following systems: Ni-Ti and Ni-Cr-Ti, with different contents of Ti. The diffusion was followed by the use of radioactive iron, Fe^{95}. The examination of the diffusion processes in these alloys showed that in the transition from a solid solution to the limit of solubility of titanium the diffusion

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On the Limits of Solubility

energy increases. Moreover the experimental data show that the limit of solubility has a comparatively complicated structure. The transition of the solid solution to the heterogeneous phase in the alloys is realized by a zone of the state of order. In the phase diagrams of the metallic systems it is correct also to take into account the zone of the ordered state beside the usual phases. There are 3 figures and 8 references, 5 of which are Soviet.

ASSOCIATION: Institut metallurgii im. A. A. Baykova Akademii nauk SSSR Moskva
(Moscow, Metallurgical Institute imeni A. A. Baykov, AS USSR)

Card 2/2

AUTHOR: Shinyayev, A. Ya. SOV/126-6-3-9/32

TITLE: Diffusion in Saturated Nickel-base Solid Solutions (Diffuziya v ogranichennykh tverdykh rastvorakh na osnove nikelya)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 3, pp 450-455 (USSR)

ABSTRACT: The results are described of diffusion studies in saturated solid solutions of the following systems: Ni-Ti; Ni-Ti-Cr; Ni-Ti-Cr-W-Al. The diffusion coefficient was measured by means of radio-active tracers in the temperature range 920 to 1250°C. From the measured diffusion coefficients the activation energy was calculated and also the values of the pre-exponential factor for the diffusion of iron in the investigated alloys. The results of the investigations have shown that in the entire investigated temperature range the process of diffusion in the studied nickel-base solid solutions proceeded with the same activation energy . The activation energy of the process of diffusion increases successively during a change over from pure nickel to alloys of the system: binary Ni-Ti;

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SOV/126-6-3-9/32

Diffusion in Saturated Nickel-base Solid Solutions

ternary Ni-Ti-Cr, quinary Ni-Ti-Cr-W-Al. Changes of the diffusion activation energy in alloys under otherwise equal conditions reflect objectively the changes in the energy of the inter-atomic interaction of the atoms of the crystal lattice during change over from one alloy to another one. The activation energy of the process of diffusion in complex nickel-base solid solutions shows a linear dependence of the logarithm of the pre-exponential factor.

There are 3 figures, 1 table and 19 references, 14 of which are Soviet, 2 English.

ASSOCIATION: Institut metallurgii imeni A.A. Baykova AN SSSR (Institute of Metallurgy imeni A. A. Baykov)

SUBMITTED: September 22, 1956.

1. Nickel alloys--Diffusion 2. Nickel alloys--Temperature factors 3. Nickel alloys--Mathematical analysis 4. Isotopes (Radioactive) --Applications

Card 2/2

SOV/24-58-10-15/34

AUTHORS: Kornilov, I. I., and Shinyayev, A. Ya. (Moscow)

TITLE: Diffusion in Alloys of the System Nickel-Chrome-Tungsten-Aluminium-Titanium (Diffuziya v splavakh sistemy nikel'-khrom-vol'fram-alyuminiy-titan)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 10, pp 96-99 (USSR)

ABSTRACT: The resistance to loading of alloys in this system, according to the work of Kornilov and Titov (Ref.3), depends essentially on the composition of the alloy and temperature. As the temperature increases from 600 to 750°C, the region of maximum strength is displaced from alloys with a titanium content of 1.8 to 4.5 wt.% towards alloys containing 1.3 to 3.3 wt.%. However, the region of maximum strength on further increase in temperature (up to 1000°C) is displaced in the direction of alloys with a high titanium content. Only at temperatures above 1100°C is the region of maximum strength of the alloys rapidly displaced in the direction of dilute solid solutions. Microscopic, X-ray and other investigations of these alloys, which have been carried out in this work (Ref.3) have shown that the maximum solubility of titanium at a temperature of 1100°C is of the order of 1 wt.%. On raising the temperature, the solubility of titanium increases

Diffusion in Alloys of the System Nickel-Chrome-Tungsten-Aluminium-Titanium

considerably and at 1200°C it exceeds 4 wt.%. In alloys containing excess titanium a phase based on Ni_3Al is precipitated in which some aluminium atoms are displaced by titanium. The lattice parameter of the solid solution increases from 3.57 to 3.58 Å with increase in titanium content from 1 to 9 wt.%. For the investigation of diffusion, alloys with constant contents of Cr (20 wt.%), W (6 wt.%) and Al (4.5 wt.%) were prepared and had the following quantities of titanium: 1, 2, 3, 5, 7 and 9 wt.%. All these prepared alloys were heat treated at 1200°C for four hours prior to diffusion annealing. Investigation of the micro-structure of these alloys showed that the crystal size of the solid solutions of alloys in this system was 300 to 400 μ and changed very little with increased annealing time. At a titanium content of 3 wt.% and above, an intermetallic phase precipitates out along the grain bodies and boundaries, the quantity of which increased with increase in titanium content. The investigation of diffusion in selected alloys was carried out at four temperatures, namely,

Diffusion in Alloys of the System Nickel-Chrome-Tungsten-Aluminium-Titanium

955, 1060, 1165 and 1250°C. The duration of diffusion annealing varied from 400 to four hours. In order to carry out the annealing, the specimens were sealed under vacuum into a double-walled quartz ampoule. A titanium shaving was placed between the walls. Measurement of the diffusion coefficients D was carried out by removing thin layers from the specimen by electrolytic polishing and measuring the radio-activity of the substance removed during the time of polishing (Ref.4). The accuracy of measurement was 5 to 8%. Radio-active Fe^{59} was used as the diffusing substance, since it is closest in its physical and chemical properties to nickel. The results of measurements of the diffusion coefficient of iron in alloys of the system Ni-Cr-W-Al-Ti are given in the table, p 97. Change of the value D in relation to the titanium content in the investigated alloys is given in Fig.1. From this figure it can be seen that the curves representing the dependence of D on the composition of the alloy show distinct minima for D, the position of which is temperature dependent. As the temperature at which the diffusion investigation is carried out is increased, the minimum value of D is always displaced from two-phase alloys towards the unsaturated solid solutions.

Diffusion in Alloys of the System Nickel-Chrome-Tungsten-Aluminium-Titanium

From the given coefficients of diffusion, the activation energy of diffusion E and the magnitude of the pre-exponential multiplier D_o were calculated by the lowest square method (see table). The change of E and D_o in relation to the alloy composition is given in Fig.2. From this figure it is evident that as small quantities of titanium (0.5 wt.%) are introduced, a decrease in E and D_o takes place, which is in agreement with earlier investigations (Refs.5, 6). As the titanium content is further increased so E and D_o increase, reaching a maximum at 3 wt.% Ti. As the titanium content increases beyond 3 wt.% E and D_o constantly decrease. This change in the diffusion characteristics of E and D_o with composition is due to the different degree of order establishment in the alloys and to the formation in the solid solution of a basis for an alloy of a new phase having a different degree of coagulation. The results of investigation of diffusion, together with the strength of these

Diffusion in Alloys of the System Nickel-Chrome-Tungsten-Aluminium-Titanium

alloys, are given in Fig.3, where the disposition of minima for the diffusion coefficient D in relation to the region of maximum strength of the alloys in the system Ni-Cr-W-Al-Ti is represented by crosses forming the curves 2 and 3. From Fig.3 it follows that for all the investigated temperatures, the alloy compositions having a minimum D are entirely confined to the range of alloys of maximum strength. Similar deductions applying to the ternary Ni-Cr-Ti system have been found to also apply to the quinternary system Ni-Cr-W-Al-Ti. Hence these characteristics have a general nature. From this it can be concluded that a change in the strength of alloys at high temperatures is determined essentially by diffusion processes. Hence, in order to obtain greater strength in an alloy at high temperatures and great loads, it is essential to introduce elements in such quantities as to ensure a minimum diffusion displacement of atoms of the alloy components. The dependence of maximum strength on alloy composition (Fig.3) can be explained as follows: as the temperature is increased from 600 to 700°C, the maximum strength region, owing to coagulation of the second phase, is displaced towards the region of alloys containing less titanium (the structural

Diffusion in Alloys of the System Nickel-Chrome-Tungsten-Aluminium-Titanium

factor is most important). At 800°C diffusion processes develop due to the action of stress, as a result of which the strength in this temperature range is determined by structural as well as diffusion factors. Hence, the maximum strength range is narrowed down. At temperatures of 950 to 1000°C the diffusion processes are speeded up to such an extent that they noticeably influence the strength. As compositions with minimum diffusion coefficients at these temperatures refer to dilute solid solutions, the maximum strength region is displaced in the same direction. It should be noted that at temperatures below 1100°C the value of D in the system Ni-Cr-W-Al-Ti is considerably lower than in the system Ni-Cr-Ti. There are 3 figures, 1 table and 8 references, 7 of which are Soviet, 1 English.

SUBMITTED: February 1, 1958.

AUTHOR: Shinyayev, A. Ya. SOV/32-24-8-24/42

TITLE: A Method of Measuring the Coefficient of Diffusion in Metals and Alloys (K metodike izmereniya koeffitsiyentov diffuzii v metallakh i splavakh)

PERIODICAL: Zavodskaya laboratoriya, 1958, Vol. 24, Nr 8, pp. 979-983 (USSR)

ABSTRACT: In connection with a previous paper this paper presents studies carried out to determine the conditions for using the method of electrolytic polishing in the determination of the diffusion coefficient in multi-component alloys and in other multi-phase systems. One condition for this method is the use of very small volumes of electrolytes. This condition is very important, since in these electrolytes the concentration of the radioactive atoms dispersed in dissolved layers is determined. If the volume of the electrolyte is too great the concentration of the radioactive atoms present will be too low and a precise measurement will be more difficult. In the studies reported here a volume of 2,5 ml. was used. In the determination of the diffusion coefficient a proportional dissolution of the alloy components must take place in the polishing. Studies to determine the optimal conditions for this dis-

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A Method of Determining the Coefficient of Diffusion in Metals and Alloys

solution were carried out and the results tabulated. It was observed that the best results in electrolytically polishing cylindrical samples were obtained when the cylinders had a diameter of 15 mm. To obtain better results in measuring the concentration of the radioactive atoms in the dissolved layers the electrolytes were volatilized and then condensed. Results of the determination of the diffusion coefficient and the energy of activation of diffusion are given. The authors mentioned in the investigations. There are 1 figure, 1 table, and 5 references, 4 of which are Soviet.

ASSOCIATION: Institut metallurgii i. . A. Baykov Akademii nauk SSSR (Institute for Metallurgy imeni A. A. Baykov, Academy of Sciences USSR)

Card 2/

AUTHOR: Shinyayev, A. Ya. 2o-119-4-2o/6o

TITLE: The Investigation of Diffusion in Alloys on a Nickel Base With a Component Number of From 2 to 8 (Issledovaniye diffuzii v splavakh na osnove nikelya s chislom komponentov ot 2 do 8)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol 119, Nr 4, pp 7o2 - 7o4 (USSR)

ABSTRACT: In the present paper the influence of complicated alloys on the diffusion characteristics of a solid nickel solution is investigated. With an increasing number of elements introduced into the alloy the activation energy of the diffusion will probably at first grow rapidly and later more slowly. In order to be able to investigate this problem the author studied the diffusion in the following alloys: Ni -Ti, Ni-Ti-Cr, Ni-Ti-Cr-W-Al, Ni-Ti-Cr-W-Al-B, Ni-Ti-Cr-W-Al-Mo-C and Ni-Ti-Cr-W-Al-Mo-C-Nb. All compositions of alloys selected here relate to the domain of the transition from unsaturated solid solutions to heterogeneous compositions. As a diffusing element, iron, which contains the radioactive isotope Fe^{59}, was used in all alloys. Measuring of the diffusion coefficient

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was carried out according to a method worked out previously (Reference7), which is based on the application of electrolytic polishing for the purpose of lifting off thin layers from the sample. By means of this method it is possible to measure the diffusion coefficient with an accuracy of 5 - 8 %. Diffusion was investigated within the temperature interval of 950 to 1250°. The results obtained by investigating the temperature dependence of diffusion coefficients for the above alloys are given in a table. The experimental points are well suited for straight lines, which is indicative of the high degree of accuracy with which diffusion coefficients were determined. The angles of inclination of the linear relationships between the logarithm of the specific activity of the radioactive isotopes in the lifted layers lg D and 1/T continue to increase during transition from binary to more complicated alloys. From the angles of inclination of these straight lines the activation energy of diffusion was calculated by the method of the least squares. The value

 of E in solid solutions on a nickel base can be considerably

increased by the introduction of suitable elements which are soluble in nickel. The activation energy of diffusion in an eight-component solution is twice as great as in the diffusion of iron in pure nickel. A relatively considerable increase of E is observed in connection with the introduction of a single element into the solid nickel solution. If 3 and 5 components are introduced, E increases only more slowly. A further increase of E occurs only in connection with the forming of new bonds of a chemical character among the atoms of the alloys. Thus, E newly increases considerably by the production of carbides. By the introduction of certain quantities of elements selected especially for this purpose, a considerable increase of the forces of the interatomic binding of the crystal lattice of the alloy is brought about by the distortion of the lattice of the solid solution. The binding forces and the energy of the atoms of the crystal lattice attain their maximum value by the introduction of 5 - 6 elements into the alloy on a nickel basis.

The Investigation of Diffusion in Alloys on a Nickel Base With a Component Number of From 2 to 8 20-119-4-20/60

The results obtained here agree well with the data concerning the durability of the same alloys. There are 2 figures and 9 references, 8 of which are Soviet.

PRESENTED: October 22, 1957, by I. P. Bardin, Member, Academy of Sciences, USSR

SUBMITTED: October 3, 1957

Card 4/4

SHIRYAYEV, A.Ya.

Diffusion characteristics of nickel alloys having from two to eight components and their heat resistance. Issl.po zharopr.splav. 4:165-169 '59. (MIRA 13:5)
(Diffusion) (Nickel alloys--Metallography)

AUTHOR: Shinyayev, A. Ya. SOV/126-7-6-11/24

TITLE: Diffusion in Alloys of the Nickel-Titanium System

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 7, Nr 6, pp 875-878 (USSR)

ABSTRACT: In the present paper the results of a study of diffusion in Ni-Ti alloys within the range 1 to 14 wt.% Ti are given. The solubility of titanium in nickel at 800°C is 8 wt.% and it slowly increases with rise in temperature until at 1200°C it is 11 wt.% (Ref 4). When the titanium content exceeds its solubility in nickel a new phase forms, the basis of which is the intermetallic compound Ni_3Ti with a hexagonal lattice. The nickel-base solid solution has a face-centred cubic lattice. In order to study diffusion processes, alloys were chosen in such a manner as to be able to investigate the saturated as well as the non-saturated solid solution ranges and also the two-phase range. The percentage of titanium contained in the prepared alloys was 1,2,4,6,8,10.6 and 14 wt.%. The alloys cast under a ternary slag (MgO, Al_2O_3, CaO) were annealed as follows: 1150°C for 24 hours, 800°C for 100 hours, cooled in air. An investigation of the

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Diffusion in Alloys of the Nickel-Titanium System

microstructure has shown that alloys containing 8 wt.% Ti and less have a coarse grained polyhedral structure, the grain size being 2 to 3 mm. Alloys containing 10.6 and 14 wt.% Ti have a pronounced two-phase structure. Iron was used as the diffusing element as it is the closest element to nickel base alloys in its physical and chemical properties. The iron used contained the radioactive Fe^{59}. Diffusion was studied at the following temperatures: 950, 960, 1050, 1093 and 1247°C. Diffusion coefficient measurements were carried out by a method which is based on the removal of thin layers from the specimen by means of electrolytic polishing and measuring the specific activity of the thus dissolved substance (Ref 5). Annealing of the specimens was carried out in quartz ampules filled with purified argon and a shaving of titanium was placed between their double walls. During annealing the alloys did not show any signs of oxidation. The results of measurement of the diffusion coefficients were easily reproduceable in parallel specimens. The accuracy of measurement was 5 to 8%. An analysis of the

Diffusion in Alloys of the Nickel-Titanium System

experimental results of the dependence of the specific activity of radioactive atoms in the removed layers has shown that diffusion had taken place in Ni-Ti alloys throughout the depth of the diffusion layer which was evidently due to the large grain size. The results of the study of diffusion of iron in Ni-Ti alloys are shown in a table, p 876. In Fig 1 the diffusion coefficient of iron in alloys of the Ni-Ti system at various temperatures are shown. In Fig 2 the dependence of the activation energy of diffusion E (curve a) and of the pre-exponential multiplier D (curve b) on the composition of the alloy is shown. In Fig 3 the grain boundary areas during the formation process of a new phase are shown. From the results obtained in this work for the diffusion coefficients it is possible to assume that at the temperatures of 950 to 1100°C the maximum strength of the alloys will correspond to a titanium content of the order of 8 wt.%. At a higher temperature the maximum strength range will be displaced in the direction of lower titanium content. There are 3 figures, 1 table and 9 references,

SOV/126-7-6-11/24

Diffusion in Alloys of the Nickel-Titanium System

8 of which are Soviet and 1 English.

ASSOCIATION: Institut metallurgii imeni A. A. Baykova AN SSSR
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SUBMITTED: February 1, 1958

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S/129/61/000/001/007/013
E073/E135

AUTHORS: Tavadze, F.N., Corresponding Member, AS Georgian SSR, Kartoziya, Ye.S., Engineer, and Shinyayev, A.Ya., Candidate of Technical Sciences

TITLE: Solubility of Magnesium in Iron

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1961, No. 1, pp. 33-35

TEXT: The results are described of determining the solubility of magnesium in iron of high purity at elevated pressures. As starting materials, electrolytic iron (99.87%) and magnesium (99.9%) were used. The iron was saturated with magnesium in cylindrical containers of commercially pure iron with 5 mm thick walls. The working part was 20 mm high with a diameter of 20 mm. Iron discs of 19.5 mm dia and 4 mm thick were charged into the container together with magnesium, the volume of which was approximately equal to the volume occupied by the iron specimens. The container was hermetically closed with a threaded stopper and a lid. Following that, the container was sealed in vacuum into quartz ampoules and annealing was effected at 1120 °C for a duration

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which was sufficient for producing appreciable diffusion layers. The duration of the annealing depended on the hermeticity of the container, i.e. on the pressure. The pressure in the container was produced by the considerable differences in the coefficients of expansion of the magnesium and the iron. According to calculations, pressures between 500 and 1500 atm can be produced by this means. For such pressures no appreciable solubility of magnesium in iron was detected below 1000 °C. Above this temperature the solution was due to the hermeticity of the system. No microstructural changes in the surface layer of the specimens was observed after annealing for 18 hours at 1120 °C. However, chemical analysis by deposition on the mercury cathode of a 0.4 mm thick surface layer showed a content of 0.17-0.19 wt.% of magnesium. In specimens annealed for 40 hours at the same temperature microstructure changes in the surface layer were detected; a zone of columnar crystals, orientated perpendicular to the surface of the specimen and having an average thickness of 0.5 mm was observed. The magnesium content in a 0.4 mm thick layer was about 0.6%. Outside this layer the

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structure was the ordinary polyhedric one. X-ray structural investigations by the powder method showed that the lattice period tends to decrease on transition to layers that are saturated with magnesium (2.858 compared to 2.861 Å for the pure iron). The X-ray diffraction patterns showed only pure iron lines. The self-diffusion power of the iron was studied by depositing on the magnesium-containing layer the isotopes Fe^{59} and Fe^{55} and subjecting these specimens as well as reference specimens of pure iron to vacuum annealing in quartz ampoules at temperatures controlled within ± 2 °C. The self-diffusion was determined by electrolytic removal of layers and measuring the radioactivity of each layer. It was found that magnesium brings about an increase in the self-diffusion of iron; at 1080 °C the diffusion in the magnesium-containing surface layer was about 25 times as high as in pure iron. Particularly noticeable is the increase in the self-diffusion coefficient for iron that has been subjected to microstructure changes as a result of magnesium dissolution. Autoradiographic investigations have shown that volume diffusion of iron takes place

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throughout the entire depths of the diffusion zone, which indicates that the magnesium which is dissolved in the iron is uniformly distributed throughout the grain body; the diffusion depth in pure iron was 80-90 μ and over 200 μ in the magnesium-containing iron layers. This contributed to the formation of a large number of defects in the crystal lattice of the solvent metal during the process of dissolution. Indeed, in almost all cases the micro-photographs of magnesium-containing iron show pores; these coagulate, depending on the conditions of interaction between the magnesium and the iron (temperature, pressure). Magnesium dissolves in iron only at high pressures and temperatures (above 1000 °C). According to Bulloy and Human (Ref.2) dislocations can become centres of accumulation of dissolved admixtures. In the zone surrounding the dislocations the migration of atoms is considerably accelerated. Formation of vacancies should reduce the lattice period of the iron. This is in good agreement with data obtained by X-ray investigations. There are 1 figure, 1 table and 2 references: 1 Soviet and 1 English.
This is a condensed translation.
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SHINYAYEV, A.Ya.

Diffusion in solid solutions of chemical compounds and their heat resistance. Issl.po zharopr.splav. 8:19-21 '62. (MIRA 16:6)
(Solutions, Solid—Thermal properties) (Diffusion)

S/032/62/028/003/006/017
B101/B138

AUTHOR: Shinyayev, A. Ya.

TITLE: Use of chemical polishing for the study of diffusion in solids

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 3, 1962, 299 - 300

TEXT: Layers of uniform thickness can be removed, and the distribution of the diffusing substance can be analytically determined, by selecting electrolytes in which the structural components of the surface to be polished are uniformly dissolved. This was experimentally confirmed by determining the coefficient of self-diffusion of nickel with the use of Ni^{63}. A mixture of 60 - 70% acetic, 40 - 30% concentrated nitric, and 0.5% concentrated hydrochloric acids was used for polishing. Layers 4 - 6μ thick take 10 - 15 sec to remove. To restrict dissolution to the end face, the sides were coated with varnish. Thickness of the layer removed was found by weighing. The results were in agreement with micrometer measurement. Comparison of chemical and electrolytic polishing showed the same linear dependence of the logarithm of activity a on the

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square distance x from the initial surface. Disadvantages of the method are: (1) short life of the electrolyte, (2) difficulty of adjusting the electrolyte, (3) no suitable chemical electrolytes can be found for certain metals and alloys. There are 1 figure and 6 references: 3 Soviet and 3 non-Soviet. The reference to the English-language publication reads as follows: L. P. Spencer, Chemical Polishing, Metal Finishing, 56, no. 3, 52a, no. 4, 62 (1958).

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy imeni A. A. Baykov)

Card 2/2

KORNILOV, I.I. (Moskva); SHINYAYEV, A.Ya. (Moskva); PYLAYEVA, Ye.N. (Moskva)

Creep of certain metal compounds. Izv. AN SSSR. Met. i gor. delo no.5:113-115 S-O '63. (MIRA 16:11)

ACCESSION NR: AT4013924 S/2659/63/010/000/0038/0042

AUTHOR: Shinyayev, A. Ya.

TITLE: The relationship between the energies of activation of creep and diffusion in heat-resistant alloys

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya po zharoprochny*m splavam, v. 10, 1963, 38-42

TOPIC TAGS: heat-resistant alloy, creep, diffusion, activation energy, heat resistance

ABSTRACT: The author investigated the relationship between Q_{creep} and E_{dif} for pure nickel; nickel in solid solutions saturated with titanium (Ni + 8% Ti by weight) or with chromium plus titanium (Ni + 20% Cr + 3.4% Ti); and heat-resistant alloys on a base of nickel ANV-300. The individual components were first tested using radioactive isotopes. The change in the coefficient of diffusion was obtained by the method of removing layers. The change in creep was tested by bending under static loads. The results are shown in Table 1 of the Enclosure. The test showed, first of all, that Q_{croop} for nickel, just as for other metals with a cubic lattice, is somewhat lower than E_{dif}. The plastic deformation

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ACCESSION NR: AT4013924

of heat-resistant alloys was also tested. It was found that the plastic deformation of these alloys has several features distinguishing it from the plastic deformation of pure metals and dilute solid solutions. The investigation of various properties when passing from pure metals to solid solutions and to heat-resistant alloys allows one to obtain the required data about the mechanism of plastic deformation of complex alloys at various temperatures and stresses. This is the main problem in the theory of heat-resistant alloys. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: Institut metallurgii AN SSSR (Institute of Metallurgy, AN SSSR)

SUBMITTED: 00	DATE ACQ: 27Feb64	ENCL: 01
SUB CODE: MM	NO REF SOV: 013	OTHER: 004

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ACCESSION NR: AT4013924

ENCLOSURE: 01

TABLE 1 - The energy of the diffusion and creep activation of nickel and its alloys

Material	E_{dif}, kilo calories/mol			Q_{creep}
	Ni	Cr	Fe	
Ni	69.5	48	51.7	66.4
Ni — Ti	68.5	---	73.1	77.2
Ni-Cr-Ti	68.7	71.6	84.0	91.6
ANV-300	74.0	89.0	91.3	136.5 (<1100°

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ACCESSION NR: AT4013925 S/2659/63/010/000/0042/0044

AUTHOR: Shinyayev, A. Ya.

TITLE: The formation of pores during plastic deformation

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam, v. 10, 1963, 42-44

TOPIC TAGS: pore formation, crack formation, plastic deformation, copper titanium diffusion, diffusion, nickel titanium diffusion

ABSTRACT: The author investigated the influence of plastic deformation on the process of pore formation during the mutual diffusion of two components. Two pairs of metals were used: nickel-titanium and copper-titanium. The metals were heated in argon at 743-800C. The tests established that in the absence of plastic deformation in the mutual diffusion of two metals, a condition is created for the coagulation of vacancies and the formation of microcracks, in the ultimate development of which pores are formed. In the case of plastic deformation, when a sufficiently large collection of flows of vacancies formed, the coagulation of the latter is impeded, and both microcracks and pores are formed in a significantly small quantity. Orig. art. has: 3 figures.

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ACCESSION NR: AT4013925

ASSOCIATION: Institut metallurgii AN SSSR (Institute of Metallurgy AN SSSR)

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Card 2/2

ACCESSION NR: AT4007055 S/2598/63/000/010/0317/0321

AUTHOR: Shinyayev, A. Ya.; Bondarev, V. V.

TITLE: Brazing of electroplated AT-3 titanium alloy

SOURCE: AN SSSR. Institut metallurgii. Titan i yego splavy*, no. 10, 1963. Issledovaniya titanovy*kh splavov, 317-321

TOPIC TAGS: titanium alloy brazing, AT-3 alloy brazing, AT-3 alloy electroplating, electroplated alloy brazing, silver coating, rhenium coating, rhodium coating, aluminum titanium chromium alloy, iron containing alloy, silicon containing alloy, boron containing alloy.

ABSTRACT: The authors investigated the effect of brazing coated AT-3 alloy on the stress rupture strength and adhesive properties of the electrochemical coatings of Ag, Rh, and Re as well as the effect of temperature and time to perform the electrolysis on the strength of the coated metals. The time to perform the electrolysis depended on the desired thickness of the galvanic coating. Microscopic investigation of the brazed alloys revealed that under equal brazing conditions an Rh coating produces a wider diffusion zone than do those of Ag and Re. This agrees with the characteristic rate of diffusion of the coating elements, which is much larger for Ag and Re than for Rh.

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