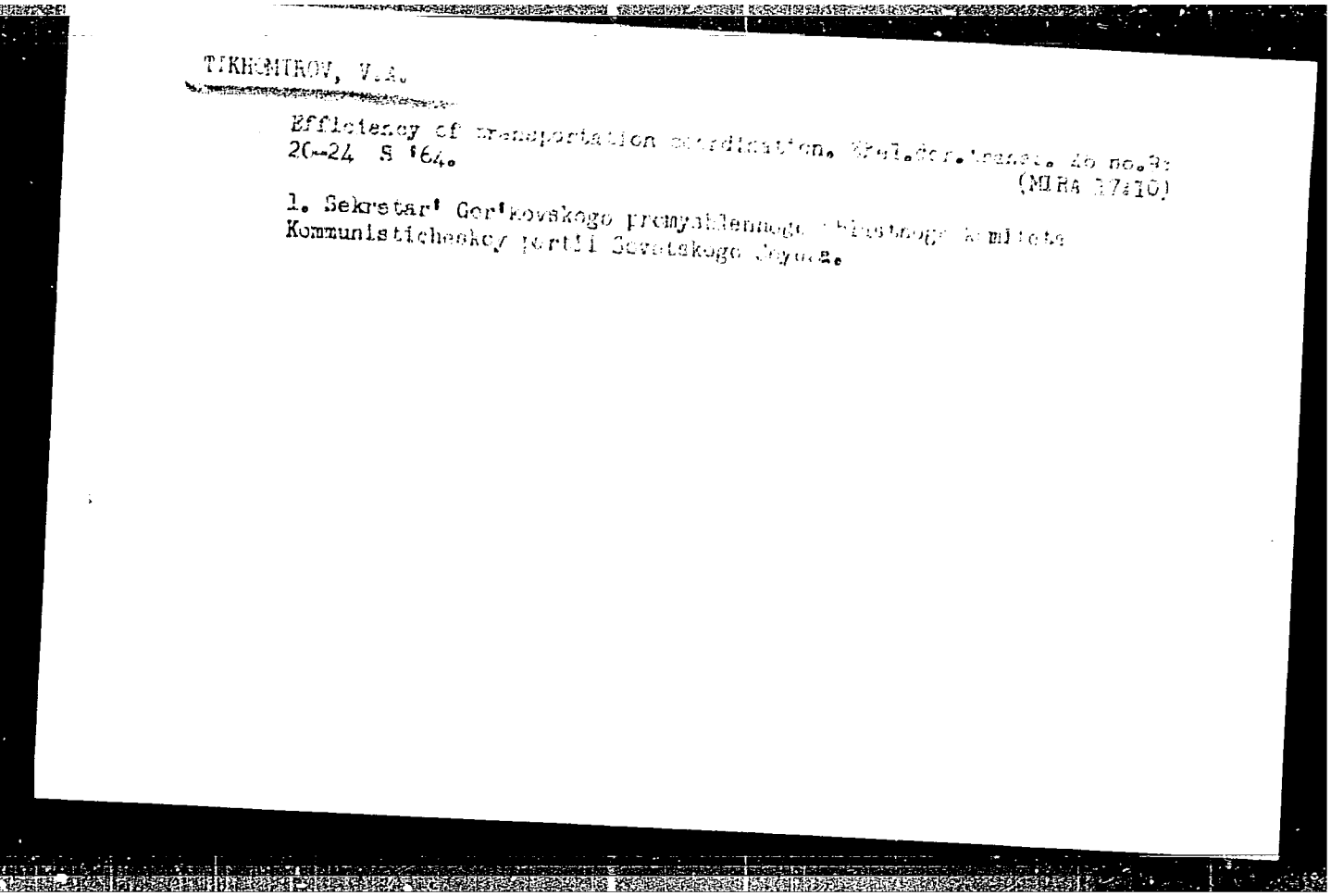
TIKHOMIROV, V.A.

Efficiency of transportation coordination. Zhel. dor. transp. 46 no.9:20-24 S '64.

1. Sekretar' Gorkovskogo promyshlennogo oblastnogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza.



TIKHOMIROV, V.A.

Efficiency of transportation coordination. Zhel.dor.transp. 46 no.3: 20-24 S '64. (MIRA 17:10)

1. Sekretar' Gor'kovskogo promyshlennogo oblastnogo komiteta Kommunisticheskoy partii Sovetskogo Soyuza.

VASHCHENKO, K.A. (Leningrad, Gatchinskaya ul., d.12, kv.19); TIKHOMIROV, V.A.

Bilateral dislocation of the leg. Ortop. travm.i protez. 22 no.1: 73-74 Ja '61. (MIRA 14:5)

1. Iz Leningradskogo nauchno-issledovatel'skogo instituta skoroy pomoshchi imeni Dzhanelidze (dir. - dotsent S.N.Polikarpov).
(KNEE--DISLOCATION)

FEDOROVICH, Mikhail Mikhaylovich; LEOSHKIN, A.P., dotsent, kand.ekonom. nauk; POLYAKOVA, dotsent, kand.ekonom.nauk; KOVALEVA, A.M., kand. ekonom.nauk; TIKHOMIROV, V.A., dotsent, kand.tekhn.nauk, retsenzent; KOVYLIN, I.I., insh., retsenzent; TEPLOV, T.V., prof., doktor ekonom. nauk, retsenzent; FEDORENKO, N.P., prof., doktor ekonom.nauk, retsenzent; TROITSKIY, D.A., dotsent, retsenzent; PETRUSHEV, I.M., red.; TER-STEPANYANTS, M.S., red.; GERASIMOVA, Ye.S., tekhn.red.

[Organization and planning of chemical enterprises] Organizatsiia i planirovanie khimicheskogo predpriiatiia. Moskva, Gosplanizdat, 1959. 547 p. (MIRA 12:7)

(Chemical industries)

TIKHOMIROV, Vladislav Borisovich, kand. tekhn. nauk;
PCHELINTSEVA, G.M., red.

[Polymer coatings in nuclear engineering] Polimernye pokrytiia v atomnoi tekhnike. Moskva, Atomizdat, 1965. 275 p.
(MIRA 18:10)

25(5)

AUTHORS: Kafarov, V. V., Tikhomirov, V. B.

TITLE: Flow-column for Carrying-out Diffusion Processes (Struynaya kolonna dlya provedeniya diffuzionnykh protsessov)

SOV/64-59-4-17/27

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 4, pp 62-64 (USSR)

ABSTRACT: The use of extractors for diffusion processes, which are based upon the principle of a jet pump, is only of advantage with systems which make possible to carry out the extraction process in one or two steps. With multi-step extractions the operation becomes complicated because of the transportation of the liquid from one extractor to the other, and an additional installation of several separators for phase separation after each extractor. Experiments were made concerning the use of ejector units for the separation of the liquids and for the purpose of increasing the final effect when the liquid enters the column (Ref 6). Further investigations led to the construction of a counterflow extractor in which the phases are separated after each step, without using additional devices for the transportation of the liquid, after a previous mixing of the phases (Ref 9). This basically new type of a column may apart from diffusion

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Flow-column for Carrying-out Diffusion Processes SOV/64-59-4-17/27

processes of the extraction (liquid - liquid) also be used for the rectification (steam - liquid), and for the absorption (gas - liquid). Several columns of this type, which were of different dimensions, were tested with the extraction process. One of these models (Fig 1) has two steps with one ejector each. The column was made of glass. Its dimensions and a description is given. When testing the operation of the column in a test unit (Fig 2), for which purpose mixtures having a difference in the specific weight of the phases of from 0.1 - 0.4 g/cm^3 were used, it was shown that the required phase separation was obtained with a height of the column segments of h = 600-800 mm. The values of the "height of the equivalent theoretical bottoms" obtained with the flow-column were almost 4 times lower than those holding for attachment columns. There are 2 figures and 9 references, 6 of which are Soviet.

Card 2/2

21(1) 5(2)

AUTHORS: Galkin, N. P., Tikhomirov, V. B., Goryaynov, N. Ye., Fedorov, V. D. SOV/89-7-2-9/24

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 -

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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 ν 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

Tikhomirov, V. B.

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

Principal Processes and Equipment (Cont.) SOV/5823

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:

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S/830/62/000/001/012/012
E111/E192

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

TITLE: Investigation of mass exchange in a plate extraction column with air mixing

SOURCE: Ekstraktsiya; teoriya, primeneniye, apparatura. Ed. by A.P. Zefirov and M.M. Senyavin. Moscow, Gosatomizdat, 1962, 213-216

TEXT: The object of the investigation was to study the separating capacity of a plate column with air mixing, on a system: water - nitric acid - uranyl nitrate - 20% solution of tri-butyl phosphate in paraffin. Columns 50-200 mm in diameter with working sections 1000-3900 mm high were used. The sieve plates were without overflow tubes (at 100-mm spacings, free cross sectional area 0.25 m^2/m^2, hole diameter 4-5 mm). The total liquid flow was 20-24 m^3/m^2 hour; with a 2 : 1 organic : aqueous liquid ratio. A maximum efficiency (minimum height equivalent of theoretical stage, HETS) was found for each set of operating conditions below the flooding value. With the total liquid flow of 24 m^3/m^2 hour an air flow of about 65 m^3/m^2 hour gave maximum efficiency,

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corresponding to an HETS of 900 mm. At lower liquid flows HETS values of about 600-700 mm were obtainable. Air mixing increased the efficiency 4-5 times to values characteristic of pulsating columns. Sampling at various levels in the columns indicated that air mixing gives a more uniform extraction efficiency over the whole column height.
There are 3 figures.

Card 2/2

TIKHOMIROV, V.B.

Designing extraction columns with sieve plates (without downcomers). Ekstr., teor.,prim., [illegible]p. no.2:294-299 '62. (MIRA 15:9)
(Extraction apparatus)

KAFAROV, V.V.; CALKIN, N.P.; TIKHOMIROV, V.B.

Development of new designs for jet extraction columns and the principles of the theory of the process. Ekstr.; teor.,prim.,app. no.2:339-346 '62. (MIRA 15:9)
(Extraction apparatus)

PANFILOVA, Z.Ye.; ROKHLIN, M.I.; RODIONOV, I.S.; FAUSTOVA, D.G.; GOL'DSHTEYN, D.S.; GORODINSKIY, S.M., red.; TIKHOMIROV, V.B., red.; PODOSHVINA, V.A., red.; VLASOVA, N.A., tekhn. red.

[Protective coatings in atomic engineering] Zashchitnye pokrytiia v atomnoi tekhnike; sbornik statei. Moskva, Gosatomizdat, 1963. 183 p. (MIRA 16:12)
(Shielding (Radiation))

TIKHOMIROV, V.B., dotsent, kand.tekhn.nauk; GUSEV, V.Ye., prof., doktor tekhn. nauk

Studying the structural and mechanical properties of bonded non-woven fabrics. Tekst.prom. 25 no.2:57-60 F '65.

1. Moskovskiy tekstil'nyy institut. (MIRA 18:4)

L 25561-66 EWT(m)/EWP(j)/T/EWA(h)/EWA(l) IJP(c) WW/RM

ACC NR: AM6004769 Monograph UR/

51
47
571

Tikhomirov, Vladislav Borisovich

Polymeric coatings in nuclear engineering (Polimernyye pokrytiya v atomnoy tekhnike) Moscow, Atomizdat, 1965. 275 p. illus., biblio. 3,450 copies printed.

TOPIC TAGS: polymer chemistry, plastic coating, protective coating, specialized coating, radiation protection

PURPOSE AND COVERAGE: The book deals with the properties, technology, and application of polymer coatings in the atomic industry, features of application of such coatings when operating under radiation conditions, and also concrete examples of their use in various branches of atomic science and technology. The book contains the basic information on paint and lacquer coatings, as well as coatings obtained by spraying plastics, from suspensions, and on the basis of free films. It reports on the most widely used types of polymer coatings--epoxy, polyester, vinyl chloride, teflon, organosilicones, and others. Much attention is paid to the endurance of polymer coatings, especially in liquid aggressive media, and data are given on the surface life of coatings in different corrosive media. The book is based on published literature data as well as research done by the author and his co-workers. It is intended for scientific workers and personnel of plants, institutes, and design organizations of the atomic and other branches of industry. It can serve as a handbook on polymer coatings, and is useful to students in chemical technology and other branches.

Card 1/2

UDC: 620.197.6 : 621.039

L 25561-66

ACC NR: AM6004769

TABLE OF CONTENTS [abridged]:

SUB CODE: 11, 14/ SUBM DATE: 29Jul65/ ORIG REF: 219/ OTH REF: 032

Card 2/2

L 34376-66 EWP(e)/EWT(m)/EWP(v)/EWP(j)/T IJP(c) WW/RM/WH

ACC NR: AP6011435 (A) SOURCE CODE: UR/0020/66/167/004/0867/0868

AUTHOR: Tikhomirov, V. B.

ORG: Moscow Textiles Institute (Moskovskiy tekstil'nyy institut)

TITLE: The effect of adhesion on the strength of glued fibrous materials

SOURCE: AN SSSR. Doklady, v. 167, no. 4, 1966, 867-868

TOPIC TAGS: reinforced plastic, synthetic fiber, glass fiber, tensile strength, adhesive bonding, bonding property

ABSTRACT: The author contends that additional increases in adhesion values will not serve in most instances to produce stronger glued fibrous materials. Values for the critical contact surface between fiber and bonding agent (i.e. the contact surface at which the summary strength of adhesive bonds of each single fiber is equivalent to the fiber's tensile strength) are usually far below the length of fibers employed in non-woven fabrics and glass fiber materials. Hence greater strength of such materials cannot result from improved adhesion, but rather from a more uniform distribution of the adhesive and from improved physical and mechanical properties of the fiber and the adhesive. The paper was presented by Academician P. A. Rebinder 9 July 65.

SUB CODE: 11/ SUBM DATE: 03Jul65/ ORIG REF: 011/ OTH REF: 000/

Card 1/1 UDC: 541.68

L 03553-67 EWT(m)/EWP(j) RM

ACC NR: AP6017531 (A) SOURCE CODE: UR/0342/66/000/001/0084/0088

AUTHOR: Tikhomirov, V. B. (Docent, Candidate of Technical Sciences); Gusev, V. Ye. (Professor, Doctor of Technical Sciences)

ORG: Moscow Textile Institute (Moskovskiy tekstil'nyy institut)

TITLE: Classification of cemented nonwoven materials

SOURCE: Tekstil'naya promyshlennost', no. 1, 1966, 84-88

TOPIC TAGS: adhesive, textile, polymer

ABSTRACT: The proposed classification for nonwoven cemented materials, including all materials obtained by physical-chemical methods, comprises five numbers and two letters to characterize the given material by its method of preparation and its composition. The classification shows whether the material was made chemically or mechanically, by what technique, and what fibrous and auxilliary (if any) material and what type of binder were used. Editorial comments point out the need for a direct and convenient index to the system, note the absence of a rigid system for indicating methods of preparing given materials, and question some of the terminology used. Orig. art. has: 3 tables.

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

Card 1/1

UDC: 677.066:168.2001.5

TIKHOMIROV, V.B.; VARLAMOV, I.V.

Performance of an arc plasmatron. Inzh. fiz. zhur. 7 no.6, 16-19 '64. (MIRA 17:12)

ACCESSION NR: AT4016995 S/3057/63/000/000/0075/0079

AUTHOR: Khankin, Yu. V.; Tikhomirov, V. B.

TITLE: Experience in the high-frequency welding and attaching of polyvinylchloride masticated rubber, formula 57-40, under the conditions of construction and assembly operations

SOURCE: Zashchitny*ye pokry*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 75-79

TOPIC TAGS: masticated rubber, vinylchloride masticated rubber, 57-40 rubber, corrosion resistant material, high-frequency welding, rubber welding, polyvinylchloride, radiation shielding, nuclear shielding

ABSTRACT: Polyvinylchloride masticated rubber, a material capable of resisting the prolonged effect of corrosive materials, is widely used in ant corrosion engineering as a protective covering for the surfaces of floors, walls, canals, pipeline sections and metal structures and as fettling for chemical equipment. However, the effectiveness of this masticated rubber depends to a large degree on the methods of welding and attachment employed. The authors describe the advantages of welding the masticated rubber with HF currents (using an LGS-1.5 generator

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ACCESSION NR: AT4016995

of Soviet manufacture). The technical characteristics of this and other generators are compared and recommendations are made, and a description given of the welding technique the authors prefer. For fastening the masticated rubber, the authors recommend dowel pins with metal washers placed under a head from 18 to 20 mm in diameter. For protecting the metal heads of the pins, the authors used high-frequency welding and a specially designed welding unit--the ROU-50 (a lightweight manual "iron" with an electrode diameter of 50 mm). The dowel head, together with the fastening collar is protected by a ring of masticated rubber which is welded to the facing. The authors claim that this method can be used in conjunction with gluing. Orig. art. has: 1 table and 3 figures.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 00

SUB CODE: NP, MT NO REF SOV: 005 OTHER: 000

Card 2/2

ACCESSION: NR: AT4017003 S/3057/63/000/000/0144/0147

AUTHOR: Tikhomirov, V. B.; Panevkina, Ye. A.

TITLE: The use of epoxy shieldings for protecting metal and concrete surfaces

SOURCE: Zashchitny*ye pokry*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 144-147

TOPIC TAGS: epoxy resin, corrosion, nuclear shielding, atomic reactor, shielding, epoxy shielding, radiation protection

ABSTRACT: Shieldings made of epoxy resins are the most widely used protection against corrosion for buildings, communications, and equipment, including nuclear devices. In the U.S.A., epoxy shieldings are used to protect steel and concrete surfaces from a radiation of 10^9 rad and the simultaneous action of boiling water. Of the resins being manufactured in the Soviet Union, the high-molecular epoxy resins can be used for nuclear shielding. This type of epoxy resin has the best physical and mechanical properties. Different compositions of epoxy resins and solvents are listed in the article. Both air and heat drying can be used for them. An addition of 1% of melamino-formaldehyde resin is used to lower the surface tension of the epoxy compound, thus improving the coating. The viscosity of the resin is also important for the coating method. Common spray guns can be used

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ACCESSION NR: AT4017003

for epoxy spraying. Orig. art. has: 3 tables.

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 00

SUB CODE: MT, NP NO REF SOV: 001 OTHER: 001

Card 2/2

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ACCESSION NR: AT4017004 S/3057/63/000/000/0148/0153

AUTHOR: Tikhomirov, V. B.; Shigorina, I. I.; Sidyakin, P. V.

TITLE: Gas-flame atomization of plastics onto large metal and concrete surfaces

SOURCE: Zashchitny*ye pokry*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 148-153

TOPIC TAGS: atomization, plastic deposition, atomic reactor shielding, shielding, nuclear reactor, atomic pile shielding, atomic reactor, nuclear shielding

ABSTRACT: Gas-flame atomization is the best method for obtaining shieldings of thermoplastic materials. The present investigation worked out methods for gas-flame atomization on construction materials. (See Fig. 1 in the Enclosure.) It was found that three 15-20 mm layers of M5-25 lacquer should be applied to metal or concrete surfaces, which are first cleaned of rust and dirt. Defects in the concrete should first be filled with a cement-polyethylene compound (water:cement: polyethylene 1:3:1), after which the material is moistened periodically for 10 days. Each layer of plastic is dried for 1-2 hours at 18-20C. The model UPN-4 VNIIAvtogen sprayer can be used for gas-flame atomization. For polyethylene coating on metal, the GLN-4 burner moves at a speed of 1-1.5 m/min. The con-

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ACCESSION NR: AT4017004

sumption of compressed air (2 atm) is 0.2 cu. m/min. and that of acetylene is 0.5 cu m/hr. The unit price for 1 sq. m of metal surface coating is 7-8 rubles. The problem of obtaining a shielding of the lowest possible porosity can be resolved by addition of graphite to the polyethylene. Orig. art. has: 3 figures.

ASSOCIATION: None

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ENCLOSURE: 01

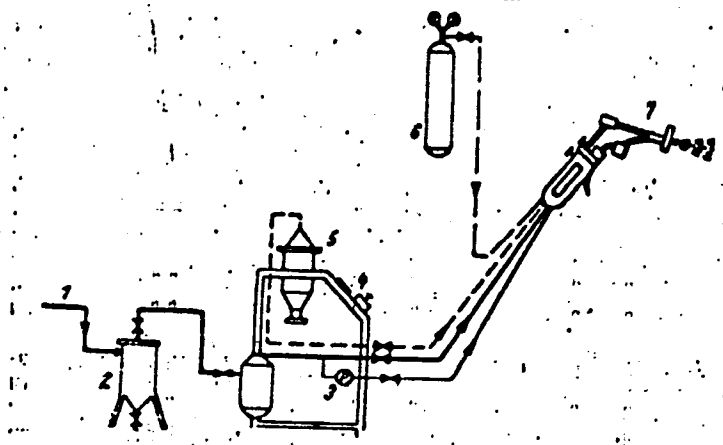

Fig. 1. Diagram of installation for gas-flame plastic spraying (thick line - compressed air for spraying; thin line - compressed air; thick dash line - acetylene; thin dash line - polyethylene powder suction)
1 - from compressor, 5-6 atm; 2 - oil-water separator; 3 - reducer; 4 - UPN unit; 5 - feeder tank; 6 - acetylene; 7 - GLN-4 burner

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ACCESSION NR: AT4017005 S/3057/63/000/000/0154/0157

AUTHOR: Panevkina, Ye. A.; Tikhomirov, V. B.

TITLE: Investigation of the vortex method for applying polyethylene shielding to metallic objects

SOURCE: Zashchitny*ye pokry*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 154-157

TOPIC TAGS: polyethylene, polyethylene shielding, vortex coating method, nuclear shielding

ABSTRACT: Polymers and low-molecular resins are widely used for shieldings, obtained by the vortex coating method. V. S. Shifrin and N. N. Samosatskiy published an article about this method (Polietilen, pererabotka i primeneniye. L., Goskhimizdat, 1961). However, the laws of vortex atomization were not clearly specified in the article. The present investigation showed that the hydrodynamic laws for common suspension layers are applicable. Low-pressure grade T-085 polyethylene was used with particles of 200-300 mm and a moisture content of not over 3%. The surfaces were first cleaned of rust, scale and dirt. The parts were heated in an electric oven to 350-400C to melt the polyethylene. (See

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ACCESSION NR: AT4017005

Fig. 1 of the Enclosure.) Smaller articles were heated to higher temperatures, due to the higher cooling rate. For a 200-250μ coating the article was lowered into the bath for 7-10 seconds. The polyethylene coating resisted temperatures as low as-50C, as well as 20% nitric acid, 30% hydrochloric acid, 36% sulfuric acid, 35% hydrofluoric acid, 90% formic acid, at 20-60C, and alkalis of various concentrations. The tests were performed for 2 to 12 months. The authors conclude that the vortex method will be widely used for coating polyethylene on chemical equipment, tools, instruments, and materials used for construction. The apparatus required for coating suspensions can be made at any factory having a machine shop. Orig. art. has: 3 figures and 2 equations.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 01

SUB CODE: OC, NP NO REF SOV: 000 OTHER: 000

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ACCESSION NR: AT4017005

ENCLOSURE: 01

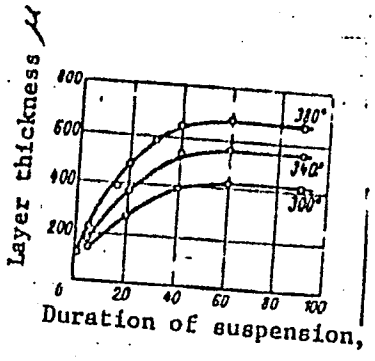

Fig. 1. Relationship between T-085 polyethylene coating surface, the duration of suspension and heating temperature.

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ACCESSION NR: AT4017007 S/3057/63/000/000/0165/0172

AUTHOR: Orzhakhovskiy, M. L.; Tikhomirov, V. B.

TITLE: Laboratory methods for determining the durability of polymer shieldings in aggressive liquid media

SOURCE: Zashchitny*ye pokry*tiya v atomny tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 165-172

TOPIC TAGS: atomic reactor, shielding, nuclear shielding, polymer shielding, shielding durability, reactor shielding

ABSTRACT: A testing method is described for determining the durability of polymer shieldings under the influence of acids, alkalies, and soaps. Shieldings working under these conditions should protect the underlying metal or concrete against corrosion. The testing conditions should be even more severe than the working conditions. Thus, the testing is performed at higher temperatures and concentrations than those under working conditions. Since the electrical resistance of the film shows, to some extent, whether it will remain as a protective coating, the testing device consists essentially of an ohmmeter (see Fig. 1 of the Enclosure). The tests show that the logarithm of the life of the shielding is directly proportional to the reciprocal of the absolute temperature. This is also true for

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ACESSION NR: AT4017007

epoxy shielding. The main phenomenon showing deterioration of the shielding is the dissolution of the protected metal in the aggressive media. Orig. art. has: 2 figures and 10 equations.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 20Feb64	ENCL: 01
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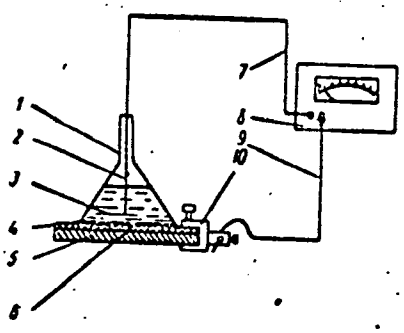
ACCESSION NR: AT4017007

ENCLOSURE: 01



Testing device for determining the durability of polymer coatings in aggressive liquid media. 1 - glass funnel; 2 - platinum wire; 3 - aggressive medium; 4 - coating; 5 - steel plate; 6 - acid-proof putty; 7 - coupling wire; 8 - MOM-4 device; 9 - coupling wire; 10 - terminal

Card 3/3

ACCESSION NR: AT4017006 S/3057/63/000/000/0158/0164

AUTHOR: Tikhomirov, V. B.; Orzhakhovskiy, M. L.

TITLE: Basic principles of rapid testing of polymer shieldings for durability

SOURCE: Zashchitny*ye pokry*tiya v atomnoy tekhnike (Shielding in nuclear engineering); sbornik statey. Moscow, Gosatomizdat, 1963, 158-164

TOPIC TAGS: atomic reactor shielding, polymer shielding, shielding, atomic reactor, nuclear shielding, shielding durability, oxidation, corrosion, radioactivity

ABSTRACT: In a previous publication (Laboratornaya metodika opredeleniya dolgovechnosti polimerny*kh pokry*tiy v zhidkikh agressivny*kh sredakh. Sm. Nast. sb., str. 166), the authors designed a test to determine the rated life of shielding in aggressive media. In the present paper, the principles behind such determinations are reviewed. Accurate estimation of the practical value of polymer shieldings can be made on the basis of durability. Chemical reactions such as polymerization and depolymerization change the properties of polymer shieldings. In addition, oxidation, corrosion, and chemical de-

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ACCESSION NR: AT4017006

composition lead to similar results. Physical processes acting in the same way include liberation of the components, cracking, wear, and sorption and desorption of radioactive substances. For the design of tests, all the above-mentioned factors must be included in the test cycles in order to determine the rated life of the shieldings.

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 20Feb64 ENCL: 00

SUB CODE: NP NO REF SOV: 001 OTHER: 000

Card 2/2

ACCESSION NR: AP4041069 S/0170/64/000/006/0016/0019

AUTHORS: Tikhomirov, V. B.; Varlamov, I. V.

TITLE: A study of arc plasmatron operation

SOURCE: Inzhenerno-fizicheskiy zhurnal, no. 6, 1964, 16-19

TOPIC TAGS: plasma temperature, arc plasmatron, energy balance, temperature distribution, radiation loss, ambipolar diffusion, heat conduction

ABSTRACT: An approximate analysis was made to determine the plasma temperature on the axis of an arc plasmatron, using the energy balance

$$EIdl = Ldl + dF,$$

where E - arc voltage, I - current, l - arc length, L - arc energy loss per unit length l, and dF - energy absorbed by the gas. To calculate the temperature distribution T_0 from the above heat balance, H. Maeker's analysis was used (Z. f. Physik, 157(1), 1, 1959) where it has been assumed that radiation losses and losses due to ambipolar diffusion are negligible. This gives rise to the simultaneous equations

$$\frac{dS_0}{dl} + \frac{15{,}7I}{W'V_0\gamma} S_0 = \frac{I^3}{R^3 g W' V_0 \gamma},$$

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Card

ACCESSION NR: AP4041069

and $$S = \int_0^{\tau} x\,dT,$$

where S_0 - heat conduction function along channel axis, W - energy content of gas, V_0 - gas volume flow, and f - space factor. The simultaneous solution of these two equations leads to an expression for T_0 which seems to agree fairly well with experimental measurements (11 000 to 13 000K using spectroscopic techniques) on argon for values of I from 40 to 250 amps and 26.4 cm^3/sec flow rates. The calculations also included the determination of i (the current distribution) along the channel length. Orig. art. has: 3 formulas, 3 figures, and 1 table.

ASSOCIATION: none

SUBMITTED: 12Aug63 ENCL: 00

SUB CODE: ME NO REF SOV: 003 OTHER: 011

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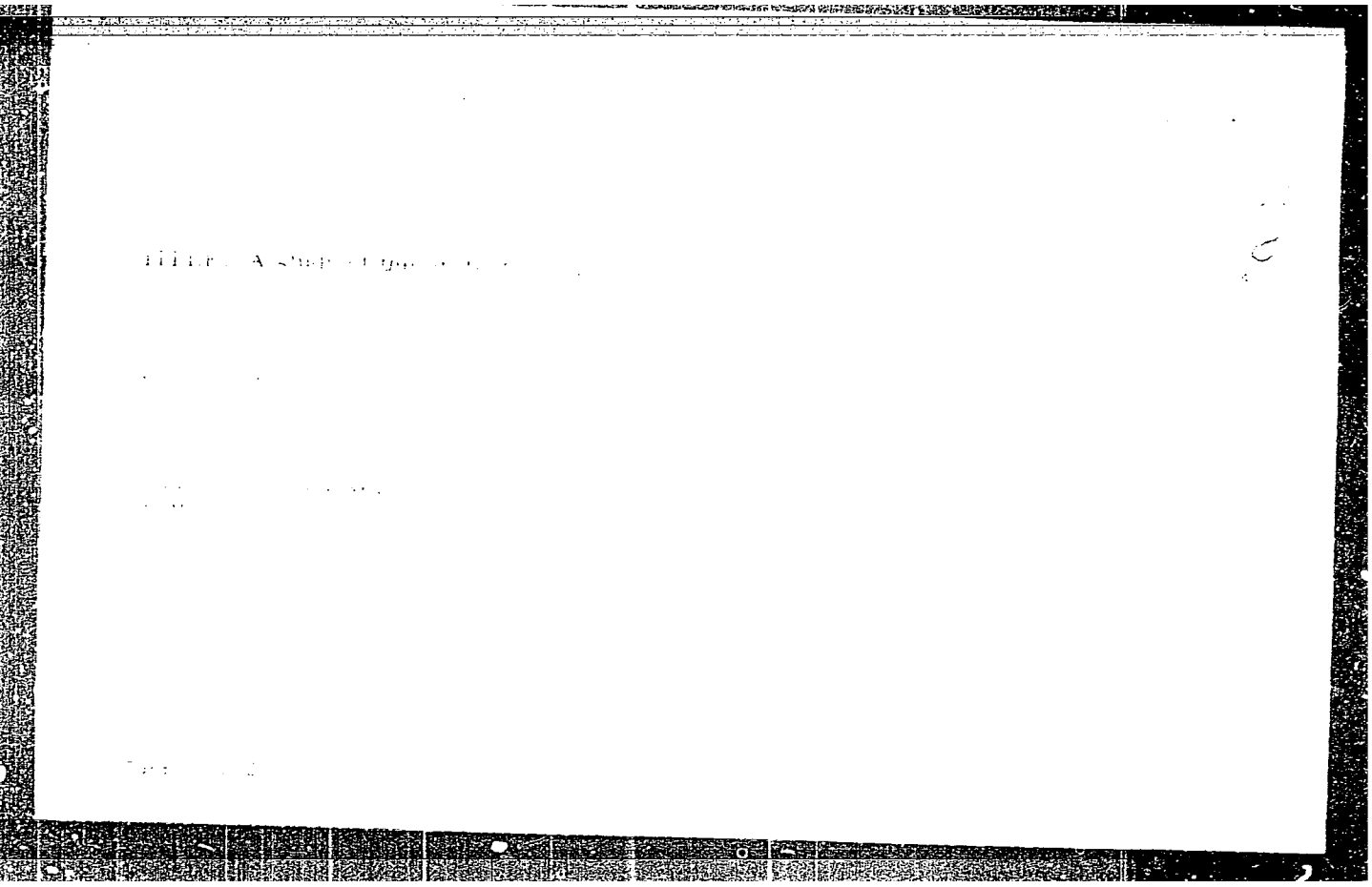

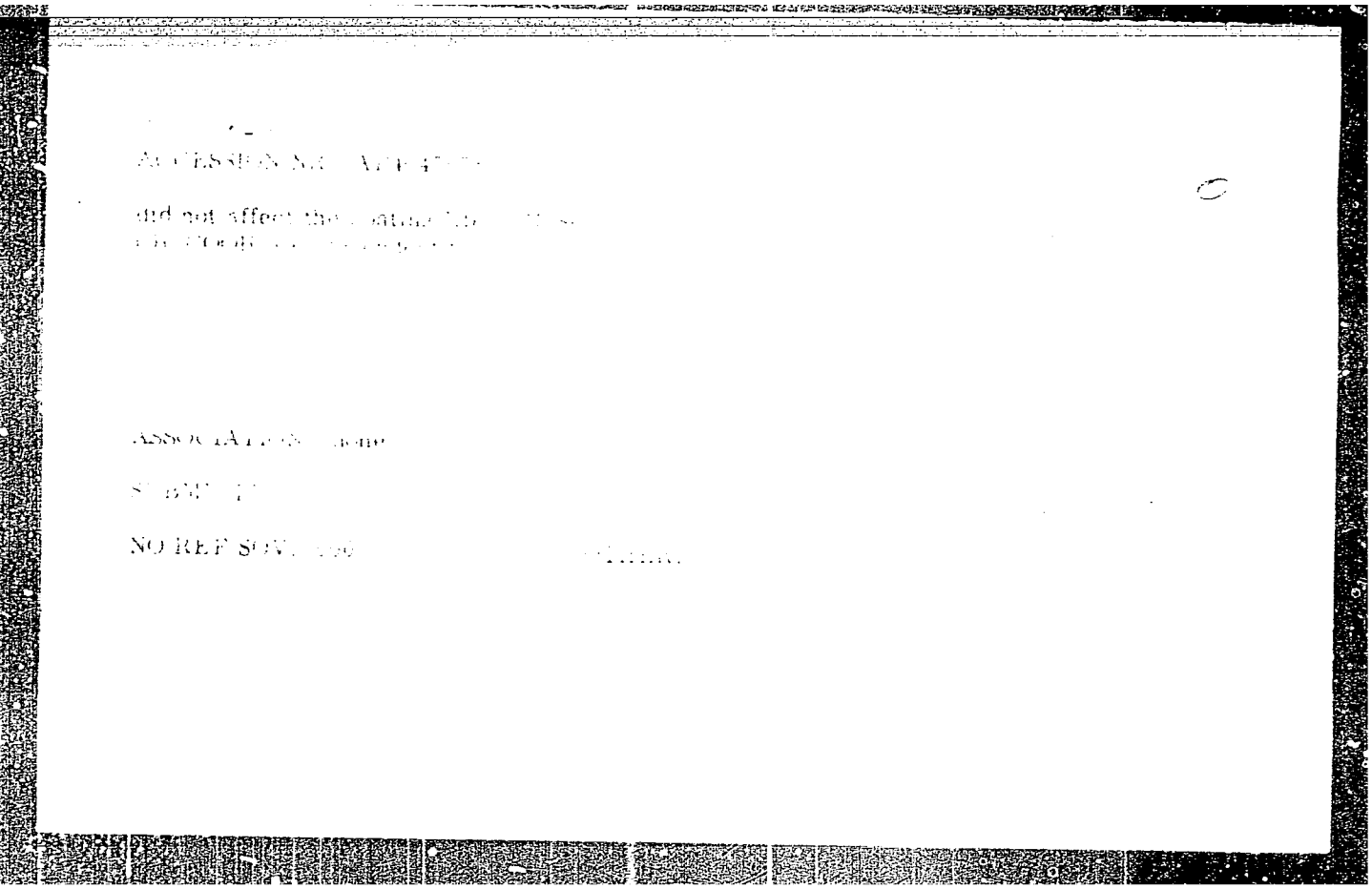

L 04809-67 EWT(1) GW

ACC NR: AP6023012 (A) SOURCE CODE: UR/0167/66/000/002/0045/0049

AUTHOR: Kokonkov, Yu. N.; Tikhomirov, V. D.

31
B

ORG: Tashkent Polytechnic Institute (Tashkentskiy politekhnicheskiy institut)

TITLE: Seismic stability of flexible structures and the effect of the associated soil mass

SOURCE: AN UzSSR. Izv. Ser tekhn n, no. 2, 1966, 45-49

TOPIC TAGS: seismicity, structure dynamic stability, soil mechanics, soil property, GENERAL CONSTRUCTION, STRUCTURAL ENGINEERING

ABSTRACT: A flexible structure whose foundation rests on an elastic base of the thickness H is considered. Since the foundation does not get displaced in the horizontal direction, it may be assumed that displacements in the elastic base due to the movements of the foundation alone are directed vertically. The equation of motion of the foundation is derived with the aid of Hamilton's variational principle and on assuming that any earthquake-caused horizontal displacements of the flexible base vary little in depth. It is shown with the aid of the Laplace transform and the Bubnow-Galerkin system of equations that earthquake stresses get redistributed over the height of the structure as a function of soil pliability; an increase in soil pliability leads to a decrease in the torque acting on the structure's base. Given a fixed type

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L 04809-67

ACC NR: AP6023012

of soil, the stresses acting on the structure increase with increasing rigidity of the structure. As the pliability of the soild and rigidity of the structure increase, the frequencies of natural oscillations decrease. As the mass of the foundation and the associated soil mass increase and the mass of the structure decreases, the frequencies of natural oscillations decrease. The torque acting on the base of the structure may be determined on assuming in the corresponding structures that $\epsilon = 0$, i.e. on disregarding the mass of the foundation and the associated soil mass. Orig. art. has: 2 figures, 7 formulas.

SUB CODE: 13, 12/ SUBM DATE: 10Dec65 / ORIG REF: 004

Card 2/2 gd

BELYAYEV, Yu.N.[translator]; KOROLEV, P.G.[translator]; TIKHOMIROV, V.D.[translator]; PIMENOV, B.K., red.; MILITAREVA, Yu.E., red.; KHAR'KOVSKAYA, L.M., tekhn. red.

[National economic development of the Korean People's Democratic Republic after the liberation]Razvitie narodnogo khoziaistva Koreiskoi Narodno-Demokraticheskoi Respubliki posle osvobozhdeniia. Pod red. I s predisl. B.K.Pimenova. Moskva, Izd-vo inostr. lit-ry, 1962. 337 p. Abridged translation from the Korean.
(MIRA 15:12)

(Korea, North—Economic conditions)

TIKHOMIROV, V.G., kand. tekhn. nauk

Voltage stabilization on the inductor of an electron-tube oscillator. Elektrotekhnika 35 no.9:52-53 S '64.

(MIRA 17:11)

ASATULLAYEV, N.R.; BELYAKOV, L.V.; DOROKHOV, I.L.; ZHURAVLEV, B.Ya.; KATS, Ya.G.; MIKHAYLOV, A.Ye.; TIKHOMIROV, V.G.; USPENSKIY, Ye.P.

Tectonics of the convergence zone of structures in the Chingiztau and Lake Balkhash region (central Kazakhstan). Sov. geol. 8 no.4:90-102 Ap '65. (MIRA 18:7)

1. Moskovskiy geologorazvedochnyy institut i Moskovskiy gosudarstvennyy universitet.

BORINA, E.I.; TIKHOMIROV, V.G.

New data on the Devonian stratigraphy of the Sary-Su - Tengiz watershed (central Kazakhstan). [Uch.zap.] Mosk.un. no.192:20-25 '61. (MIRA 15:7)

(Sary-Su Valley--Geology, Stratigraphic)
(Tengiz Lake region--Geology, Stratigraphic)

TIKHOMIROV, V.G., kand.tekhn.nauk

Step-up transformer for induction heating. Vest. elektroprom. 33 no.7:19-20 Jl '62. (MIRA 15:11)
(Electric transformers) (Induction heating)

TIKHOMIROV, V. G.

"The Geological Structure and Paleozoic Geological History of the Sarys-Teniz Upheaval." Cand Geol-Min Sci, Moscow State U, 24 Dec 54. (VM, 14 Dec 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sumo. No. 556 24 Jun 55

MIKHAYLOV, A.Ye.; TIKHOMIROV, V.G.

Method of using aerial photographic data in geological surveying in central Kazakhstan. Sov.geol. no.42:45-64 '55.
(MIRA 8:6)
(Kazakhstan--Photography, Aerial) (Geological surveys)

TIKHOMIROV, V. G., kand.tekhn.nauk

Design of an induction heating transformer. Trudy NIITVCH no. 4:131-1'6 '63. (MIRA 17:7)

TIKHOMIROV, V. G., kand. tekhn. nauk

Induction heating transformers. Trudy NIITMASH no.1/2:178-187 '60. (MIRA 17:7)

BOGDANOV, A.A.; ZAYTSEV, Yu.A.; MAZAROVICH, O.A.; MAKSIMOV, A.A.; TIKHOMIROV, V.G.; CHETVERIKOVA, N.P.

Tectonic regionalization of a Paleozoic massif in central Kazakhstan. Vest. Mosk. un. Ser. 4: Geol 18 no.5:8-20 S-O '63. (MIRA 17:2)

1. Kafedra istoricheskoy i regional'noy geologii Moskovskogo universiteta.

TIKHOMIROV, V.G.

Consonance in the development of Paleozoic structures in the Sary-su--Tengiz upland (Central Kazakhstan) [with summary in English]. Sov. geol. 1 no.4:18-32 Ap '58. (MIRA 11:6)

1.Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Kazakhstan--Geology, Structural)

TIKHOMIROV, V. G.; TIKHOMIROVA, E. I.; SHI YAN - SHEN' [Shih Yang-shên]

Varieties of volcanism in the large tectonic zones of central Kazakhstan as revealed by the basaltoid rocks of the Zhaksykon series. Izv AN SSSR Ser geol 29,no. 5:56-66 My '64. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet.

[illegible]

11(1) P 4 PHASE I BOOK EXPLOITATION SOV/1372

Akademiya nauk SSSR. Energeticheskiy institut

Goreniye dvukhfaznykh sistem; sbornik dokladov na obshchemoskovskom seminare po goreniyu pri Energeticheskom institute AN SSSR (Combustion of Two-phase Systems; Collection of Reports of the All-Moscow Seminar on Combustion at the U.S.S.R. Academy of Sciences, Power Institute) Moscow, Izd-vo AN SSSR, 1958. 123 p. 3,200 copies printed.

Resp. Ed.: Khitrin, L.N., Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: Meleyev, A.S.; Tech. Ed.: Kashina, P.S.; Council of the Seminar: Khitrin, L.N., Corresponding Member, USSR Academy of Sciences (Chairman); Knorre, G.F., Doctor of Technical Sciences, Honored Worker in Science and Technology, Professor, Deputy Chairman; Shchetnikov, Ye.S., Doctor of Technical Sciences, Professor Deputy Chairman); Vanichev, A.P., Doctor of Technical Sciences; Voyevodskiy, V.V., Corresponding Member, USSR Academy of Sciences; Golovanov, N.V., Candidate of Chemical Sciences; Zhuk, D.S., Candidate of Chemical Sciences; Inozemtsev, N.V., Doctor of Technical Sciences, Honored Worker in Science and Technology, Professor; Kantorovich, B.V., Doctor of Technical Sciences; Kogarko, S.M., Doctor of Chemical Sciences; Lebedev, B.N.,

Card 1/6

Candidate of Technical Sciences; Nikitin, K.A., Candidate of Technical Sciences; Sokolik, A.S., Doctor of Chemical Sciences; Golovina, Ye.S., Candidate of Technical Sciences (Secretary).

PURPOSE: This collection of articles is intended for scientists working in the field of combustion.

COVERAGE: This is the first issue of proceedings of the Moskovskiy seminar po voprosam goreniya (Moscow seminar on problems of combustion). It is devoted to problems of ignition and combustion processes in two-phase liquid-vapor fuel systems, and to the general characteristics of combustion in a fuel stream. The papers published in this number were presented at the seminar in 1955/56.

TABLE OF CONTENTS:

The paper discusses the combustion of fuel droplets from the point of view of the diffusion theory of G.A. Varshavskiy [2]. The following characteristics are determined: rate of combustion, radius of the combustion zone, droplet and combustion zone temperatures, temperature areas and partial pressures around the droplet. Two methods were used: 1) combustion of large model droplets in a spherical burner (Fig. 2), 2) combustion of droplets suspended from a filament. Data were calculated for the following fuels: kerosene, benzene, isooctane, and ethyl alcohol. It was determined that the rates of burning for benzene and isooctane are similar. The rate for kerosene is on the average 25 per cent lower than for benzene, and the rate for alcohol is lower than for kerosene. The theoretical and observed temperatures of the droplets show close values, with the observed temperatures lower than the boiling points of fuel for all pressures of air. Photographs of isooctane droplets burning at various air pressures show that the pressure drop results in the flame front receding from the droplet surface and in the change of the flame form to spherical. Natural convection for droplets 100 - 200 is negligible. There are 9 figures, 2 tables, and 5 references, 2 of which are Soviet and 3 English.

Tikhomirov, V.G. Fundamental Combustion Characteristics of a Two-phase Fuel-air Mixture (October 14, 1955) 19

The paper discusses the fundamental combustion characteristics of two-phase fuel-air mixtures in a turbulent flow. A method was devised for the study of a predetermined sector of the flow with a given droplet size, and mixture composition. Flame propagation in such mixtures is due to heat flow from the burning droplets towards nonburning droplets in a medium which does not necessarily contain a combustible fuel-vapor concentration. It was determined that injection of atomized fuel into the air stream adds to the turbulence of this stream. The rate of flame propagation is modified by the turbulence of the flow. The time of combustion of the two-phase mixture, which is the time during which the components of the mixture remain in the combustion zone, has a higher value than that for a homogeneous mixture, especially for low turbulence of the stream. There are 4 figures and 5 references, 4 of which are Soviet and 1 English.

Rud'ko, A.K. Concentration Limits of Flame Propagation in a Laminar Two-phase Mixture (November 25, 1955) 26

The author presents the approximate solution for the problem of normal propagation and concentration limits of flame propagation in laminar two-phase fuel-air mixtures. The results are compared with experimental data obtained from the study of concentration limits of flame propagation (with spark ignition) in air-alcohol droplet mixtures with a flow rate below 0.5 m/sec. It was determined that there exists a satisfactory agreement of the experimental data with the theoretical. The two-phase mixtures show an expanded concentration range of the combustible mixture. The deterioration of dispersivity over a certain limit in mixtures with a low content of vaporized fuel results in a nonflammable mixture for any summary concentration of the fuel. The concentration limits of inflammability become narrower during the cooling of the mixture and during a temperature drop. There are 13 figures and 5 references, 4 of which are Soviet and 1 English.

Kantorovich, B.V. Problems in the Theory of Combustion of a Fuel Stream (June 13, 1956) 50

This paper presents theoretical and experimental considerations on the combustion processes occurring in a stream of fuel (pulverized, liquid, and gaseous). The essential differences between the streams of various fuels are indicated in the article. Solid fuels: coal ARSh from the Donets Coal Basin, coal from the Kuznetsk Basin, Chelyabinsk Basin and the Moscow Basin; peat, petroleum coke. Liquid fuels: Diesel oil, ethyl alcohol. The basic equations describing the combustion process are: 1) the stoichiometric equation of mass transfer 3) the equation of state of the gas medium 4) energy equation, and 5) the kinetic equation. Atomized liquid fuels require an additional equation for the evaporization of fuel particles. There are 33 figures, 223 equations, and 40 references, 37 of which are Soviet and 3 English.

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TIKHOMIROV, V.G.; VEYMARN, A.B.; ZHURAVLEV, B.Ya.; TIKHOMIROVA, E.I.; SHCHEBUNYAYEV, M.P.

Two types of banded structures in acid igneous rocks (Karkaralinsk District in central Kazakhstan). Vest. Mosk. un. Ser. 4; Geol. 18 no.3:25-30 My-Je '63. (MIRA 16:10)

1. Kafedra istoricheskoy i regional'noy geologii Moskovskogo universiteta.

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A005/A001

11,7350

Translation from: Referativnyy zhurnal, Mekhanika, 1961, No.2, pp.79-80, # 2B508

AUTHOR: Tikhomirov, V.G.

TITLE: The Main Characteristics of Combustion of a Two-Phase Fuel-Air-Mixture

PERIODICAL: V sb.: "Goreniya dvukhfazn.sistem", Moscow, AN SSSR, 1958, pp.19-25

TEXT: The author investigated the combustion zone of a two-phase fuel-air-mixture, located in the core of the free turbulent stream. The two-phase mixture was produced by spraying-in the fuel (Kerosene T-1) against the stream from a sprayer placed at various distances from the cut of the tube (its diameter is 260 mm). The developing flame was stabilized by a ring-shaped burner which could be displaced over the cross section of the stream. This made it possible to single out the sections of the mixture with relatively constant parameters: diameter of droplets and composition of the mixture. The rate u of the flame was determined by measuring the surface of the straight cone of the flame on the ring-shaped burner. The time τ of the combustion of the mixture was determined from the mean rate and width of the combustion zone, which was fixed according to the data of the measure-

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A005/A001

The Main Characteristics of Combustion of a Two-Phase Fuel-Air-Mixture

ments of temperatures, total pressures, and on the basis of the chemical analysis of composition along the flame axis. The effect was investigated of the summary coefficient of the air excess α (from 0.65 to 1.85), the speed of the stream (from 20 to 84 m/sec), the content of the vapor phase of fuel in the mixture (from 18 to 70%), the size of the fuel droplets (from 50 to 110 micron) on the propagation rate of the flame and the combustion time. It turned out that the sprayed fuel injected by the sprayer into the air stream leads to an additional turbulence of this stream. The propagation rate of the flame depends only on the intensity of the turbulence of the inflowing stream and may exceed the value u in the homogeneous mixture. The time τ of the combustion of the two-phase mixture in the turbulent stream exceeds the combustion time of the homogeneous mixture. The value τ decreases with increasing intensity of turbulence and increases with increasing size of the fuel droplets. The air excess coefficient shows under the conditions of the two-phase mixture a smaller effect on τ in comparison with the homogeneous mixture.

S. Gol'denberg

Translator's note: This is the full translation of the original Russian abstract.

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S/057/60/030/008/018/019
B019/B060

AUTHORS: Lebedev, B. P., Tikhomirov, V. G.

TITLE: An Experimental Study of the Combustion of Two-phase Mixtures in a Turbulent Flow

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol.30, No.8, pp.994-1005

TEXT: Results are offered of an experimental study made of the propagation characteristics of a flame and the expansion of the combustion zone of a two-phase kerosene-air mixture. The investigations were carried out in 1953 - 1956. The first section of the present paper deals with experimental methods, and in this connection the jet diagram cf Fig. 1 and the temperature field diagram of Fig. 2 are treated in greater detail. A report is further made on visual estimations of the flames made with the aid of photographs, and Fig. 3 shows the burning-out curves, while Fig. 4 offers jet photographs, and Fig. 5 is a graph illustrating the temperature of the gas near the nonburning drops as a function of the air excess. The authors finally examine the turbulent propagation rate of the flame, and with the aid of Fig. 6 show the propagation rate of the flame and the pulsation rate

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of the flow as a function of the air excess. Fig. 7 shows the reduced velocity of the turbulent flame propagation as a function of mixture composition and oxygen concentration. Fig. 8 illustrates the reduced velocity of the turbulent flame propagation as a function of the mixture temperature. In the diagrams of Figs. 9 to 12, the combustion times are drawn as functions of different parameters and burning conditions. It is noted in the summary that, unlike homogeneous mixtures, the fuel drops can be ignited by heat waves which propagate from burning to nonburning drops. The burning times are relevantly dependent on the size of the fuel drops and on the temperature of the mixture. There are 12 figures and 3 references: 1 Soviet, 1 German, and 1 British.

SUBMITTED: July 22, 1957

VB

Card 2/2

TIKHOMIROV, V.G., kand.tekhn.nauk

New system for cooling the magnetic circuit of an electric transformer used in induction heating. Vest.elektroprom. 32 no.8:29-30 Ag '61. (MIRA 14:8)
(Magnetic circuits--Cooling) (Induction heating)

TIKHOMIROV, V.G.; DOROKHOV, I.L.; KURCHAVOV, A.M.

New form of relationship between extrusions and intrusions in central Kazakhstan. Vest. Mosk. un. Ser. 4: Geol. 19 no.4: 13-21 Jl-Ag '64. (MIRA 17:11)

1. Kafedra istoricheskoy i regional'noy geologii Moskovskogo universiteta.

TIKHOMIROV, V.I.

Obuchenie novykh rabochikh na potoke; vvodnyi proizvodstvennyi instruktazh. (Moskva) Moskovskii rabochii, 1946. 81 p. illus.

Training of new workers in assembly-line methods

DLC: T60. A75T5

SO:: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress.

TIKHOMIROV, V. I.

Chashkin, I. N. and Tikhomirov, V. I. "Breeding work with the Don horse in Kirgiziya," Trudy Kirgiz. nauch.-issled. in-ta zhivotnovodstva, Issue 9, 1948, p. 3-33 -- Bibliog: 6 items

So: U- 3566, 15 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 13, 1949)

TIKHOMIROV, Vladimir Ignat'yevich; TARASEVICH, R.M., dotsent, retsenzent; LAPSHIN, A.A., dotsent, retsenzent; NOVITSKIY, V.F., inzhener, retsenzent; GIL'BERG, L.A., redaktor; KUZMETSOVA, A.G., izdatel'skiy redaktor; LEBEDEVA, L.A., tekhnicheskiy redaktor

[Organization and planning in aircraft plants] Organizatsiia i planirovanie samoletostroitel'nogo predpriiatiia. Moskva, Gos. izd-vo obor. promyshl., 1957. 610 p. (MIRA 10:11)
(Airplane industry)

TIKHOMIROV, V.I.; KOSYKHIN, A.S.

Polymerization of isobutylene on bentonite clays. Izv. vys. ucheb. zav.; neft' i gaz 2 no.5:63-65 '59. (MIRA 12:8)

1.Azerbaydzhanskiy institut nefti i khimii im. M. Azizbekova.
(Propene) (Polymerization)

SAMOYLOV, O.Ya.; TIKHOMIROV, V.I.

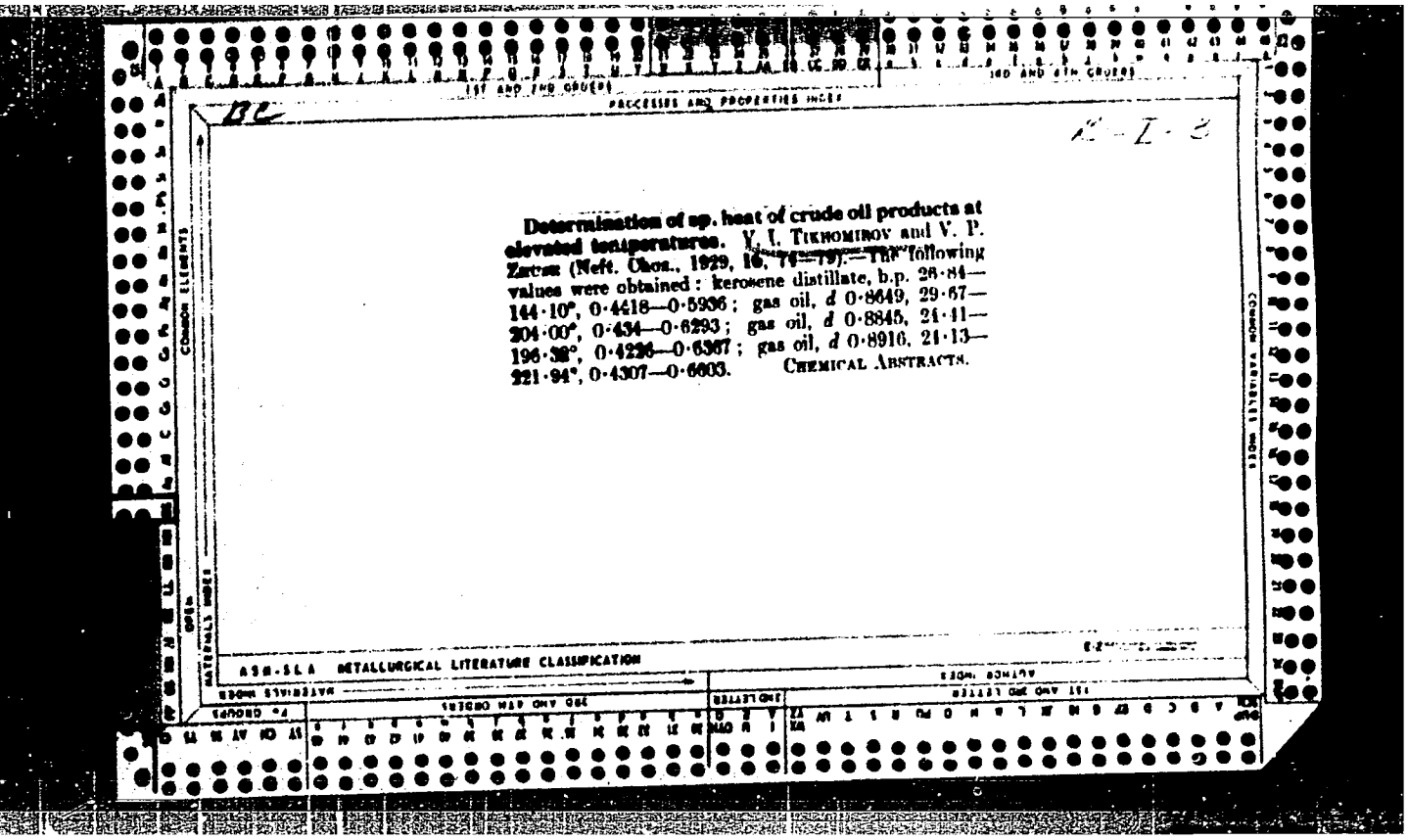
Molecular-kinetic nature of the phenomenon of salting-out. Ekstr.; teor.,prim.,app. no.2:34-36 '62. (MIRA 15:9)
(Extraction (Chemistry)) (Salts)

TIKHOMIROV, V. I.

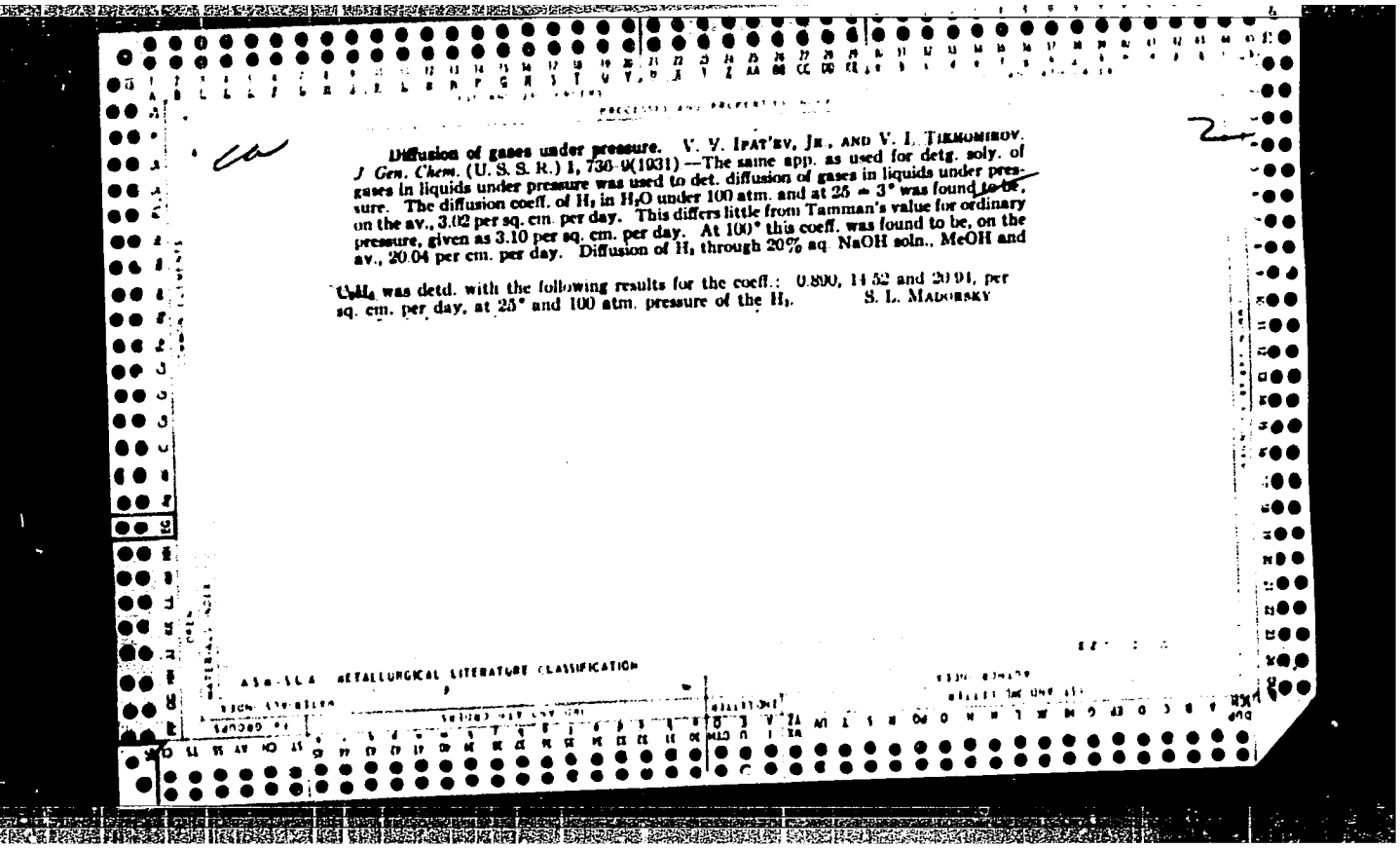
"Setting of norms for track maintenance work and its technology" by L. M. Il'in, M. G. Riabinov. Reviewed by V. I. Tikhomirov. Put' i put. khoz. 6 no.9:43 '62. (MIRA 15:10)

1. Starshiy prepodavatel' Vsesoyuznogo zaochnogo instituta inzhenerov zheleznodorozhnogo transporta.

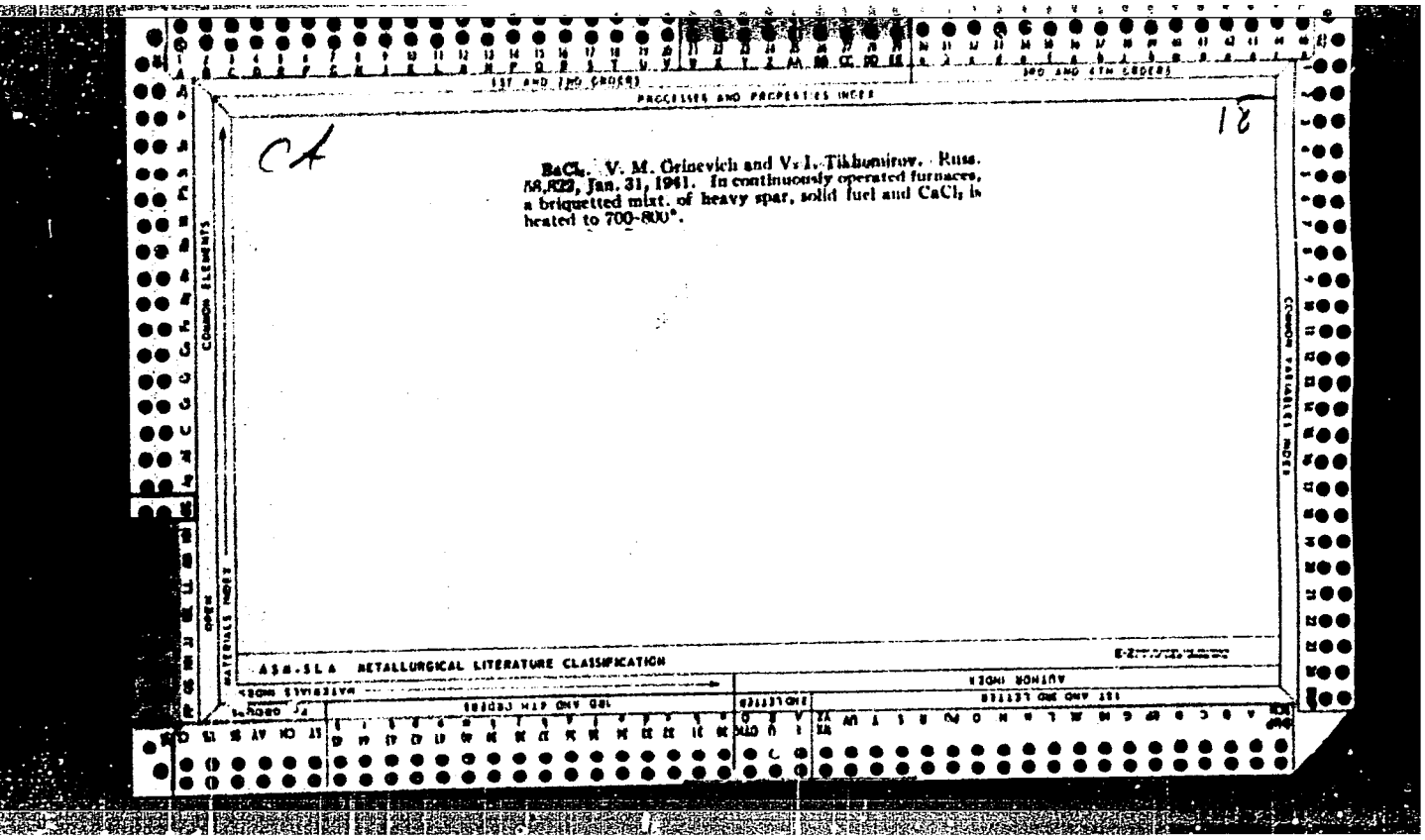
(Railroads—Maintenance and repair)
(Production standards) (Il'in, L. M.)
(Riabinov, M. G.)



Determination of sp. heat of crude oil products at elevated temperatures. V. I. TIKHOMIROV and V. P. ZAITSEV (Neft. Chos., 1929, 15, 75—79). The following values were obtained: kerosene distillate, b.p. 26·84—144·10°, 0·4418—0·5936; gas oil, *d* 0·8649, 29·67—204·00°, 0·434—0·6293; gas oil, *d* 0·8845, 24·41—196·38°, 0·4226—0·6367; gas oil, *d* 0·8916, 24·13—221·94°, 0·4307—0·6603. CHEMICAL ABSTRACTS.



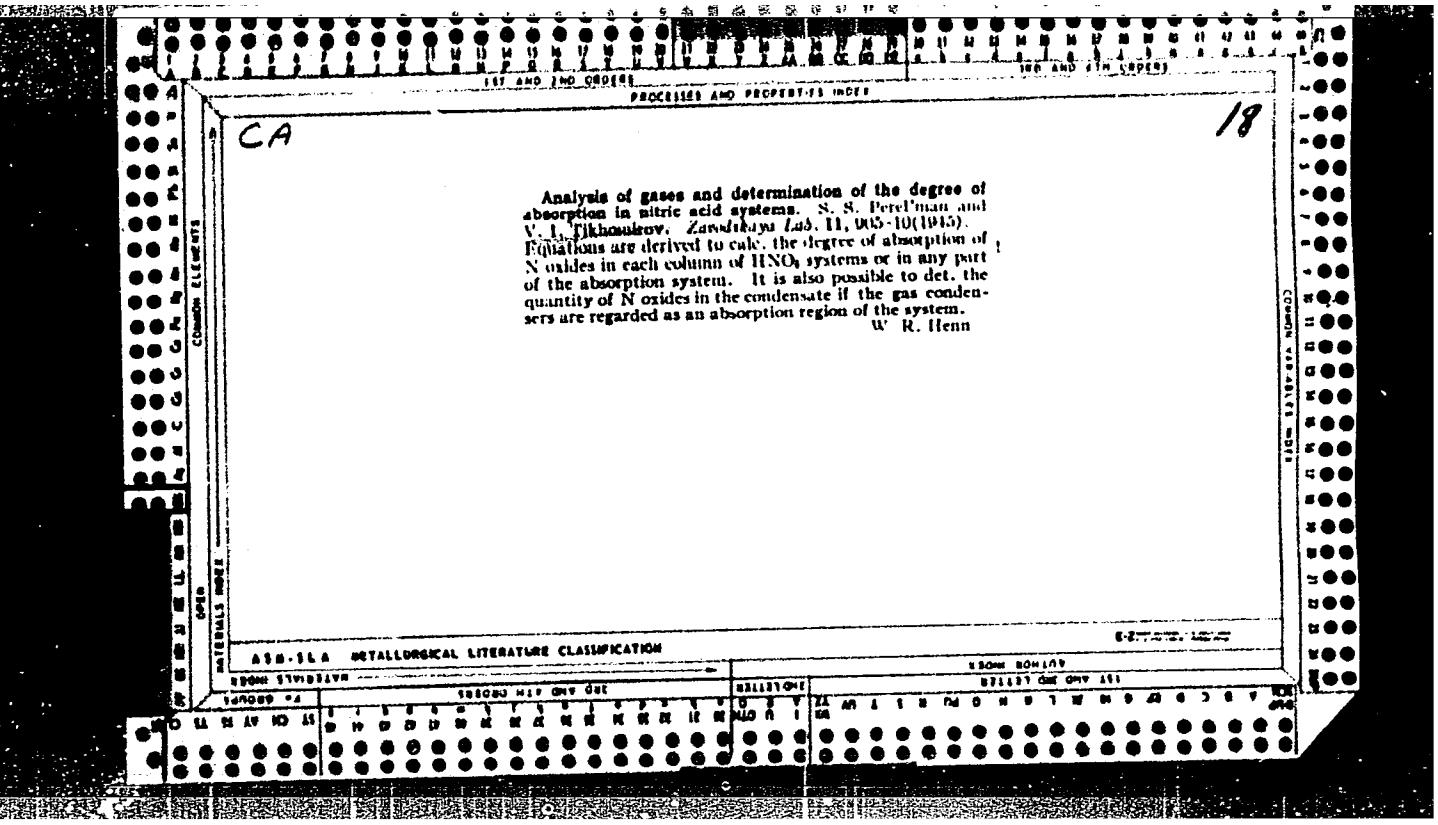
Diffusion of gases under pressure. V. V. Ipat'ev, Jr., and V. I. Tikhomirov. *J Gen. Chem.* (U. S. S. R.) 1, 736–9(1931).—The same app. as used for detg. soly. of gases in liquids under pressure was used to det. diffusion of gases in liquids under pressure. The diffusion coeff. of H_2 in H_2O under 100 atm. and at 25 ± 3° was found to be, on the av., 3.02 per sq. cm. per day. This differs little from Tamman's value for ordinary pressure, given as 3.10 per sq. cm. per day. At 100° this coeff. was found to be, on the av., 20.04 per cm. per day. Diffusion of H_2 through 20% aq. NaOH soln., MeOH and CCl_4 was detd. with the following results for the coeff.: 0.890, 14.52 and 20.91, per sq. cm. per day, at 25° and 100 atm. pressure of the H_2. S. L. Madorsky



CA

18

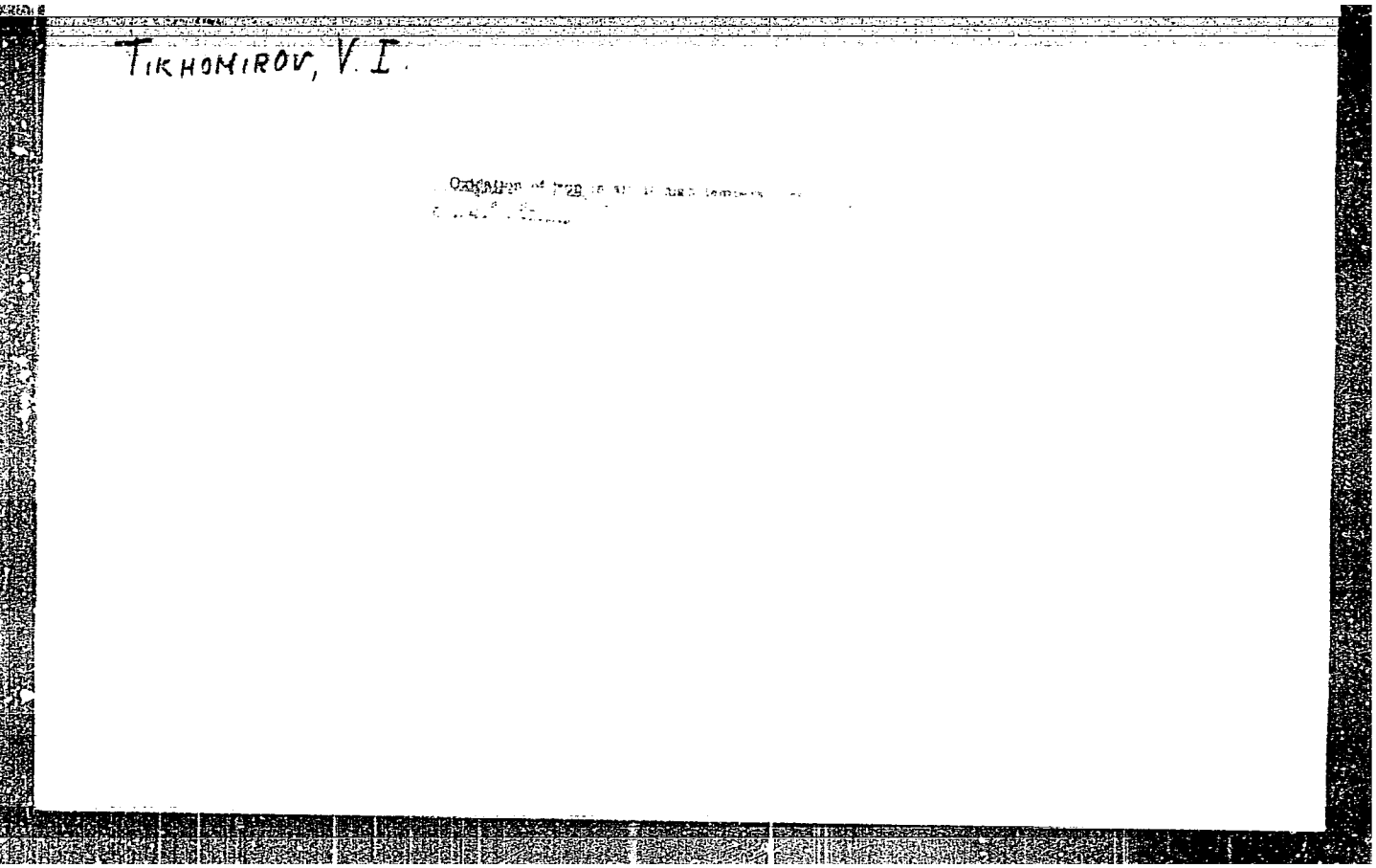
$BaCl_2$. V. M. Grinevich and V. I. Tikhonirov. Russ. 58,823, Jan. 31, 1941. In continuously operated furnaces, a briquetted mixt. of heavy spar, solid fuel and $CaCl_2$ is heated to 700–800°.

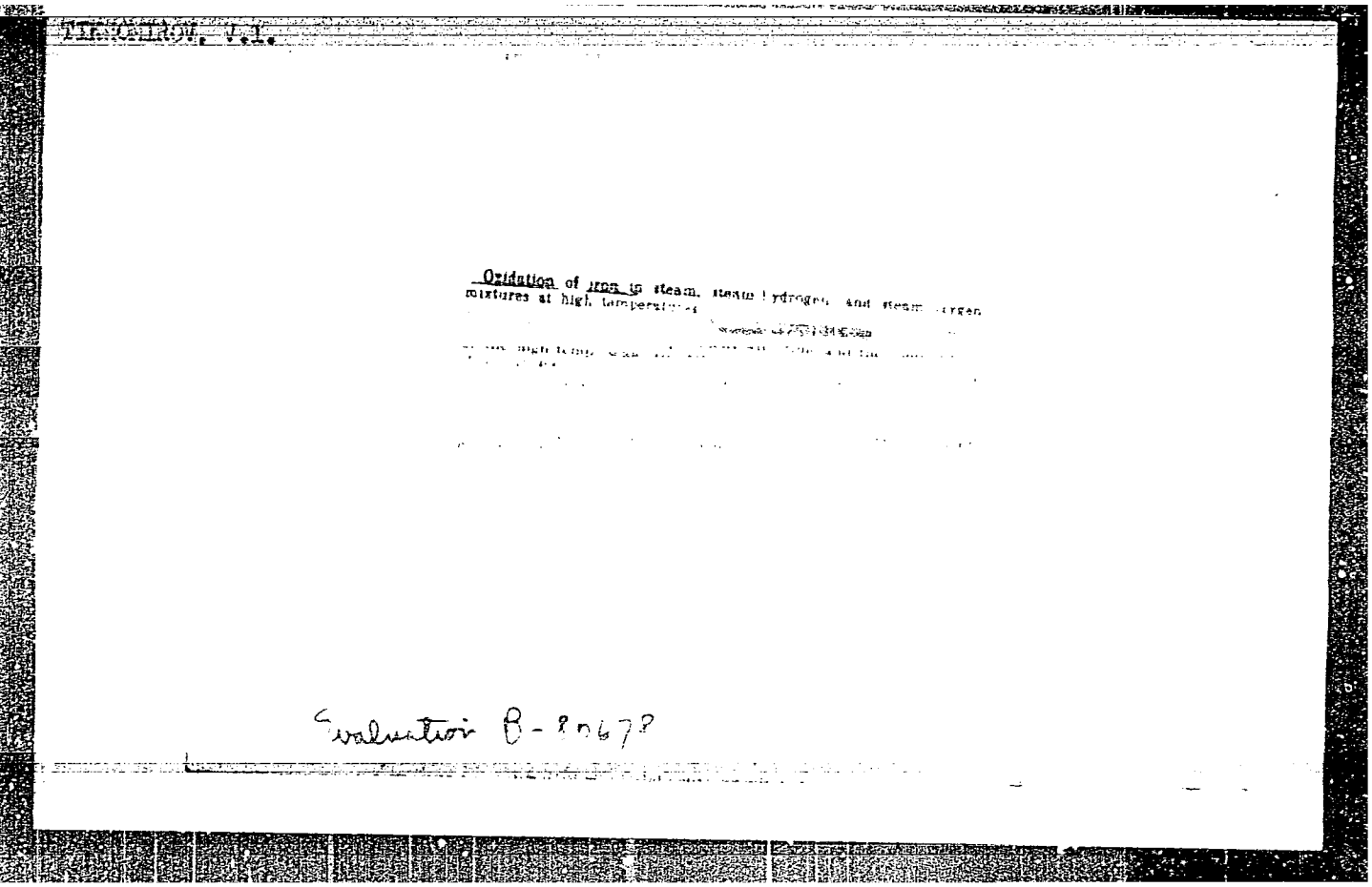


CA 18

Analysis of gases and determination of the degree of absorption in nitric acid systems. S. S. Perel'man and V. I. Tikhonov. *Zavodskaya Lab.* 11, 905-10(1945). Equations are derived to calc. the degree of absorption of N oxides in each column of HNO_3 systems or in any part of the absorption system. It is also possible to det. the quantity of N oxides in the condensate if the gas condensers are regarded as an absorption region of the system.

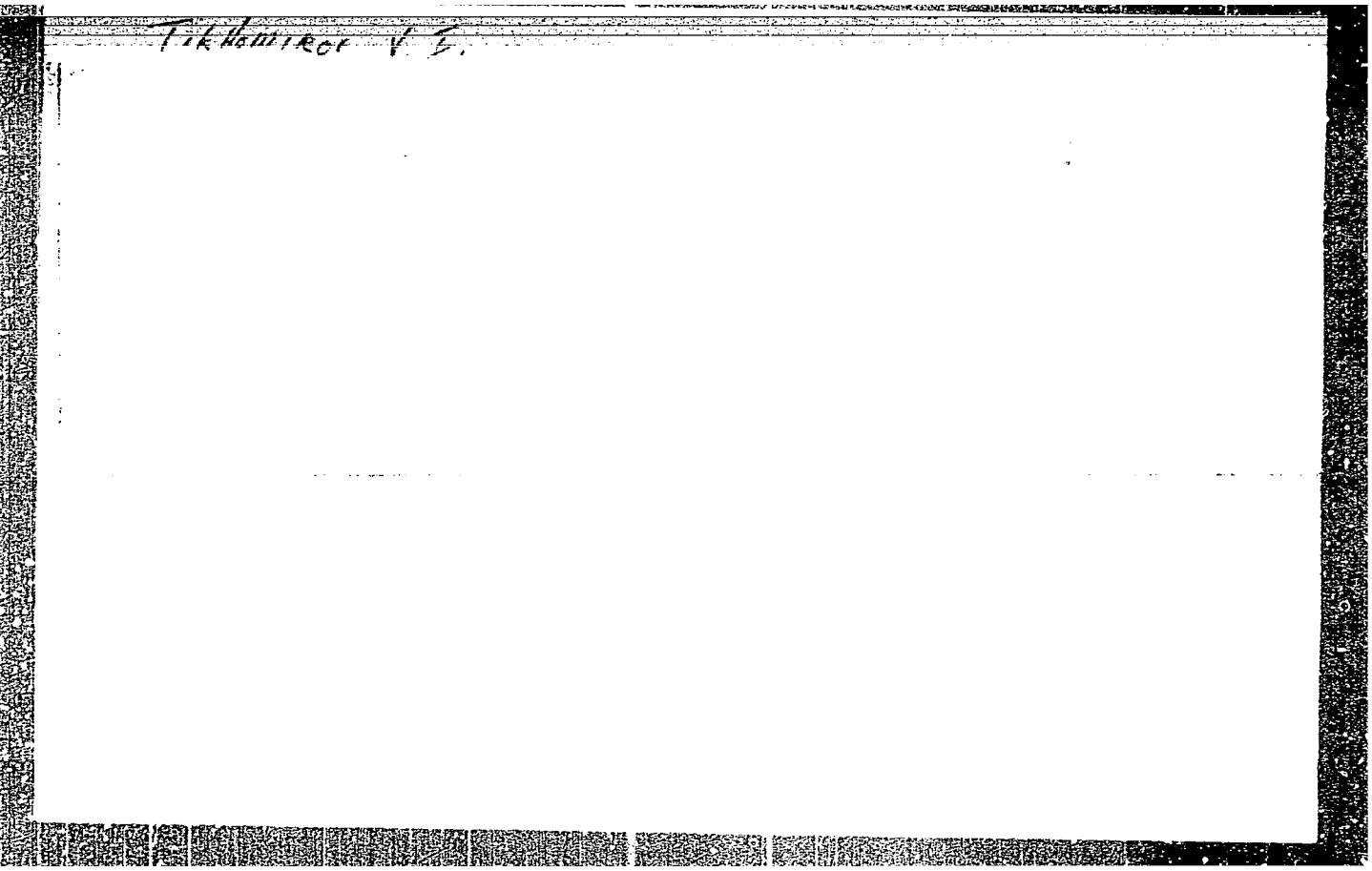
W. R. Henn

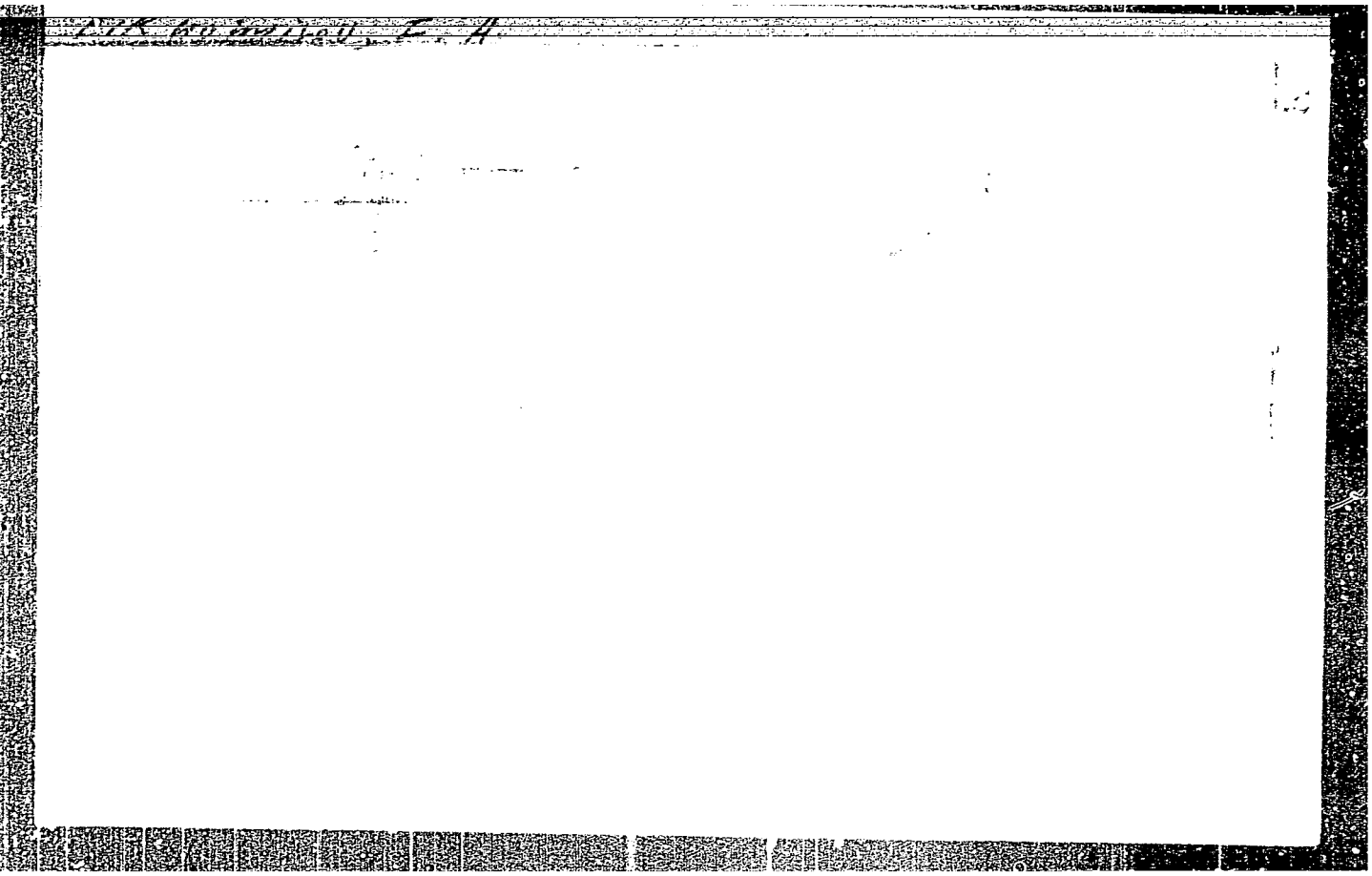


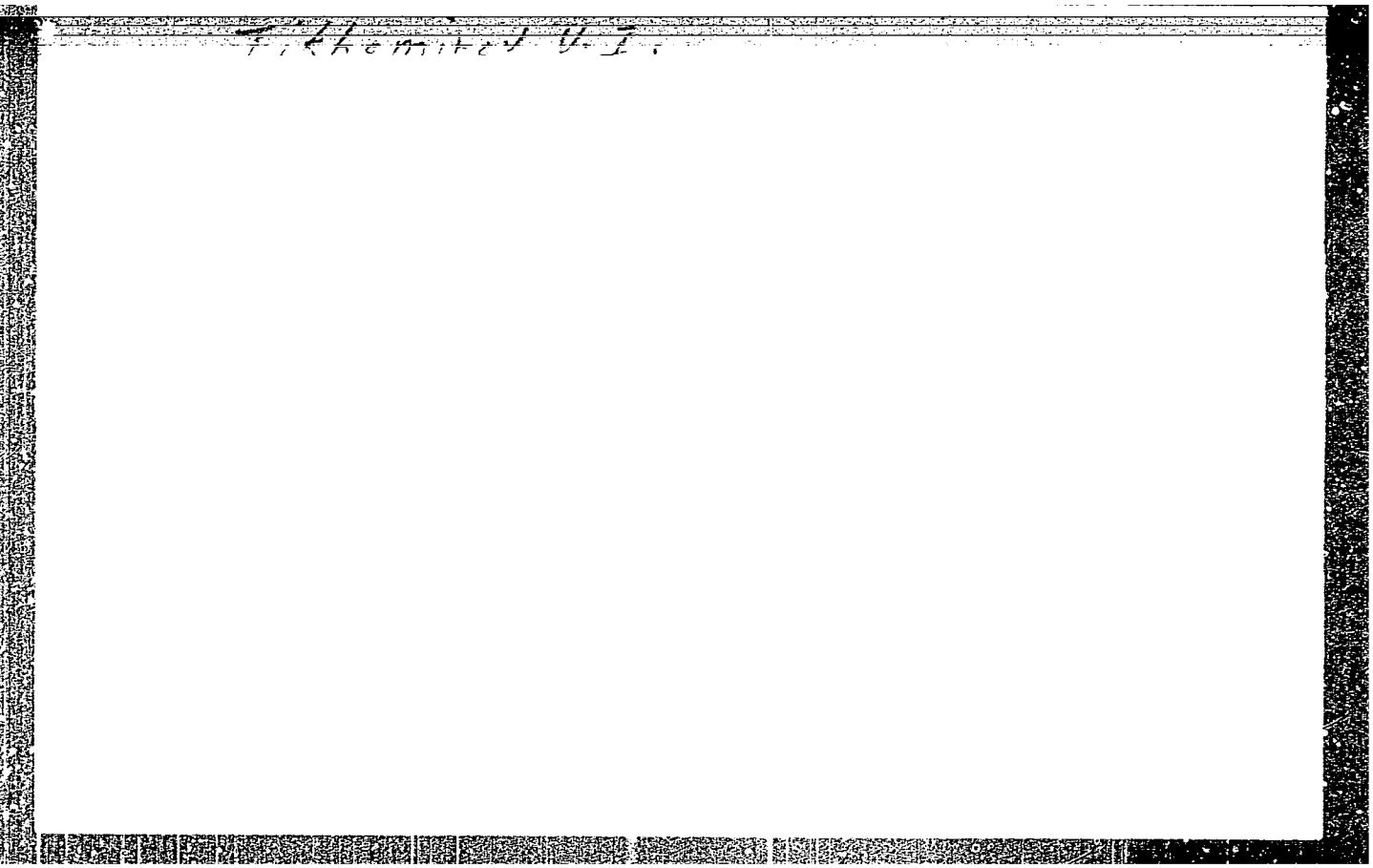


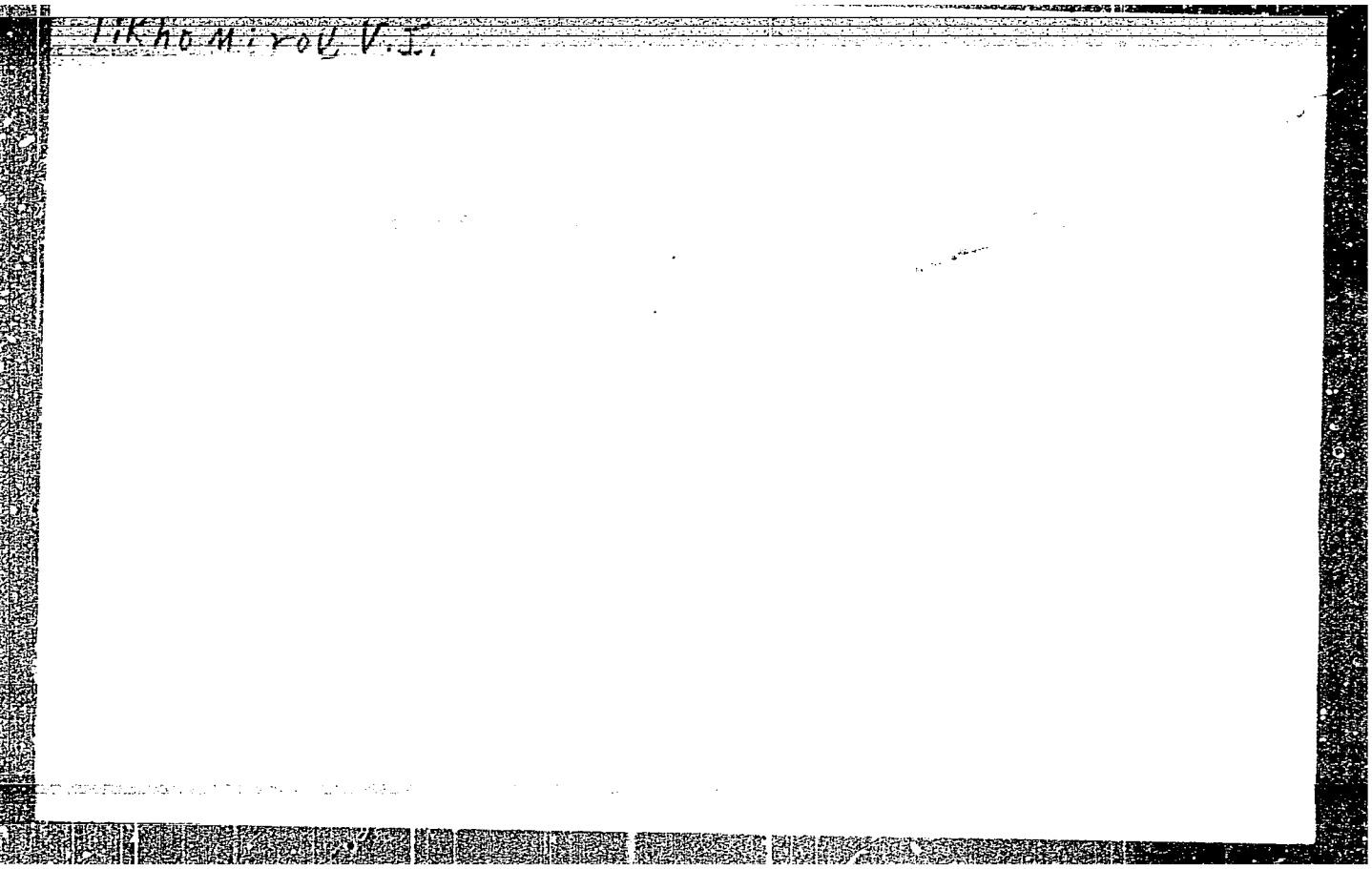
Oxidation of iron in steam, steam-hydrogen and steam-argon mixtures at high temperatures

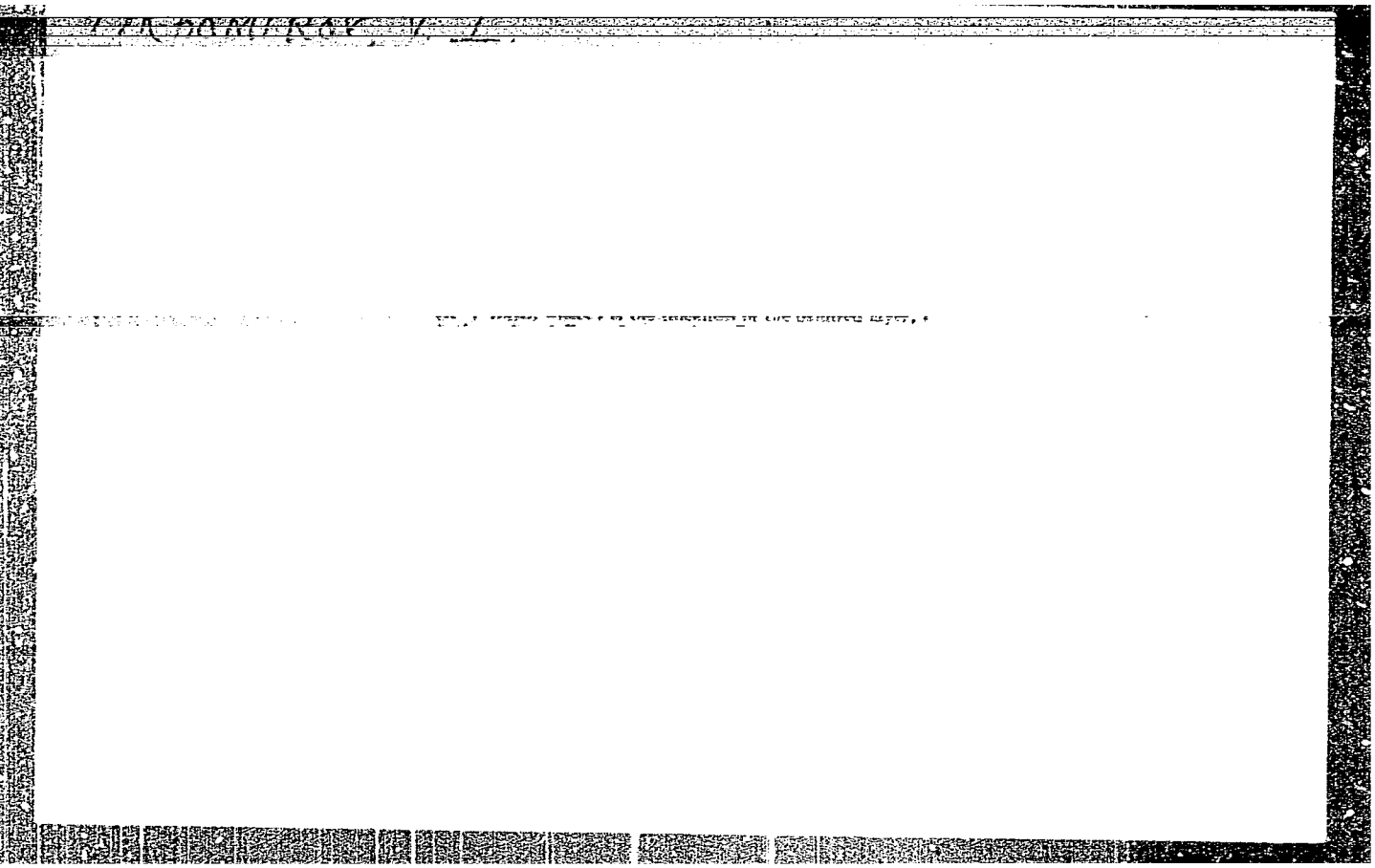
Evaluation B-1967





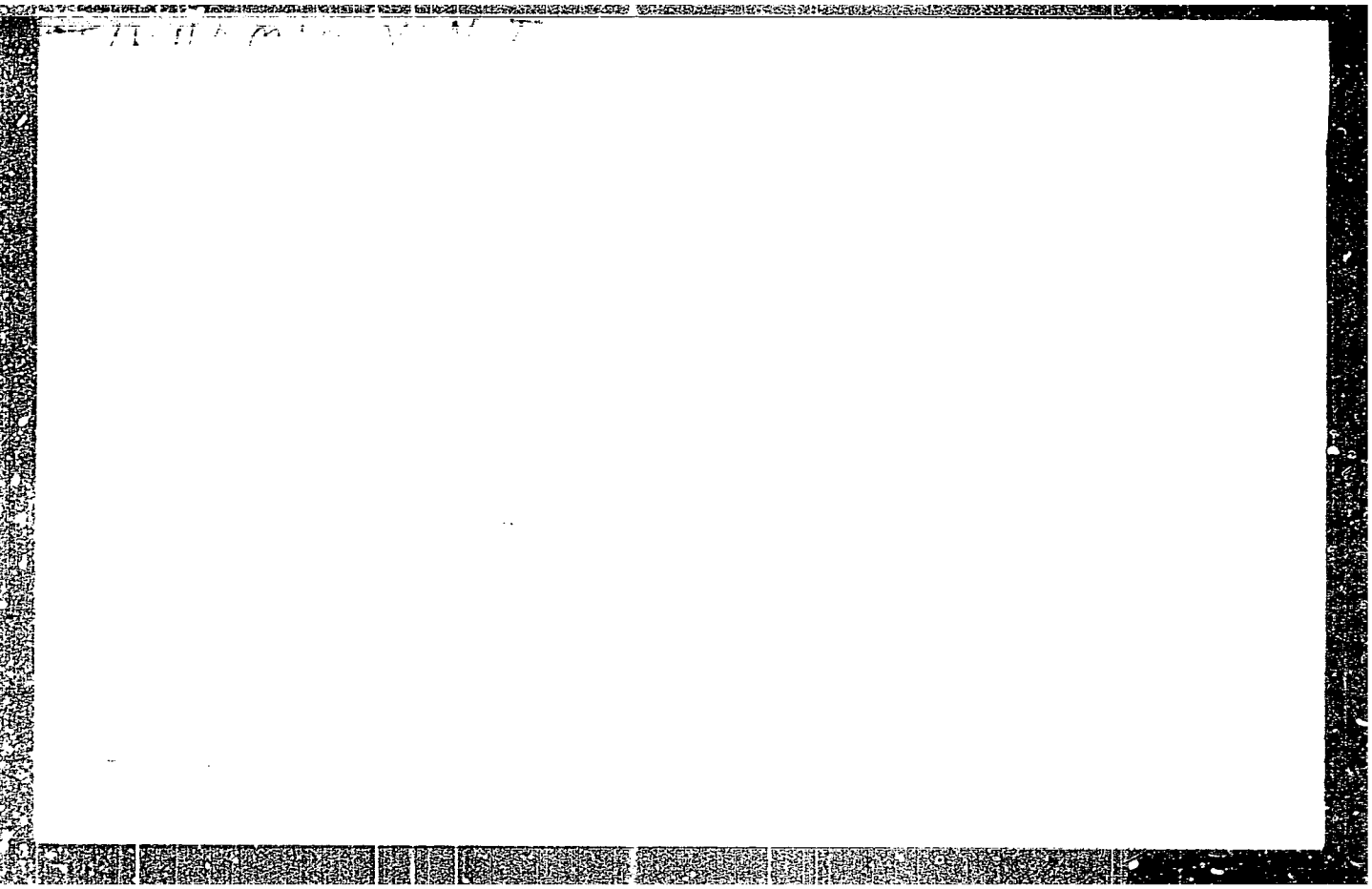






TIKHOMIROV, V.I.

On the theory of the rate of oxidation of iron and iron alloys at high temperatures. Part II: Oxidation of iron with formation of a triple layer of scale. Uch.zap.Len.un.no.175:207-227 '54.
(Iron) (Oxidation)
(MLRA 9:6)



APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755610007-9"

SOV/137-58-10-21300

Translation from: Referativnyy zhurnal, Metallurgiya, 1958 Nr 10, p 122 (USSR)

AUTHORS: Tikhomirov, V. I., Ipat'yev, V. V., Il'inskaya, O. V.

TITLE: Effect of Water Vapor and Sulfur Dioxide on the Rate of Oxidation of Iron in Air at Elevated Temperature (Vliyaniye parov vody i sernistogo gaza na skorost' okisleniya zheleza v vozdukhe pri vysokoy temperature)

PERIODICAL: Uch. zap. LGU, 1957, Nr 227, pp 126-142

ABSTRACT: The investigation of the rate of oxidation (R) of Armco Fe by the method of periodic weighing at 920° C showed that an increase of the amount of water vapor in the air from 0 to 4% considerably increases RO; the RO constant increases from 7.2 with 0.95% of water vapor to 33.2 with 5.1%, while the relative thickness of the wustite layer in the scale increases. A further increase in the moisture content of the air to 42.4% has practically no effect on RO. Investigation of RO of Fe at 720° in moist air (with a moisture content >4%) with additions of SO_2 have no appreciable effect on RO. The chemical analysis of scale formed in the oxidation of Fe in air containing 5% SO_2 showed that it contains practically no S. G. M.

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1. Iron--Oxidation 2. Iron--Temperature factors 3. Water vapor--Chemical effects 4. Sulfur dioxides--Chemical effects

SOV/137-58-8-17379

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 170 (USSR)

AUTHORS: Tikhomirov, V.I., Il'inskaya, O.V.

TITLE: The Role of Diffusion of Iron and Oxygen in the Formation of Scale on Iron (Rol' diffuzii zheleza i kisloroda v obrazovanii okaliny na zheleze)

PERIODICAL: Uch. zap. LGU, 1957, Nr 227, pp 143-150

ABSTRACT: It is demonstrated that in the oxidation of specimens of Armco-Fe, Wüstite, and magnetite coated with various inert substances, such as Ni, Cu, Ag, and Au at 960-980°C, in dry air and air containing 10% water vapor, the Wüstite layer increases mainly owing to the diffusion (D) of Fe, the magnetite layer increases by approximately 78% owing to the D of O_2 and only by 22% owing to D of Fe, the hematite layer increases exclusively owing to D of O_2 in the direction of the inner surface of the hematite layer.

G.M.

1. Iron--Scale 2. Iron--Diffusion 3. Oxygen--Diffusion 4. Diffusion--Moisture factors

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SOV/137-58-10-21299

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 122 (USSR)

AUTHORS: Tikhomirov, V. I., Ipat'yev, V. V., Lagutina, A. G.

TITLE: Investigation of the Range of Homogeneity of Wüstite at a Temperature of 980°C (Issledovaniya oblasti gomogennosti vyustita pri temperature 980°)

PERIODICAL: Uch. zap. LGU, 1957, Nr 227, pp 151-162

ABSTRACT: The range of homogeneity of wüstite formed on Armco Fe at 980° was investigated with the aid of a method based on periodic weighing and passing through the reaction tube of the furnace during oxidation of a mixture of steam and H_2 of various composition. A relationship is established between the composition of the gaseous phase and the equilibrium composition of the wüstite. The range of homogeneity of wüstite obtained at 980° lies within the limits of 75.3 - 77.95% Fe. The experimental data are generalized by a single approximate equation: $\log_{10}(Fe^{3+}/Fe^{2+}) = -3.7 + 8500/T + 0.25\log_{10}P_{O2}$.

1. Iron oxides--Analysis 2. Iron oxides--Temperature factors

Card 1/1

G. M.

SOV/137-58-8-16376

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 8, p 21 (USSR)

AUTHOR: Tikhomirov, V.I.

TITLE: Determination of the Coefficient of Diffusion of Iron Through Wüstite (Opredeleniye koeffitsiyenta diffuzii zheleza cherez vyustit)

PERIODICAL: Uch. zap. LGU, 1957, Nr 227, pp 163-176

ABSTRACT: On the basis of data on the oxidation of Fe in water vapor at high temperatures the coefficient of diffusion D of Fe through wüstite in the process of scale formation is established and the equation for the D is obtained. It is established that in the oxidation of Fe in water vapor the D is 6-10 times greater than that of the oxidation in dry air. The energy of activation of the diffusion of Fe in dry air proved equal to 39,800 cal/mol, which corresponds to the energy of activation of self-diffusion.

M.G.

1. Iron--Oxidation 2. Iron--Diffusion 3. Iron oxides --Properties

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SOV/137-58-9-19467

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 189 (USSR)

AUTHORS: Tikhomirov, V.I., Il'inskaya, O.V.

TITLE: Rate of Oxidation of Wüstite at Elevated Temperatures (Skorost' okisleniya vyustita pri vysokikh temperaturakh)

PERIODICAL: Uch. zap. LGU, 1957, Nr 227, pp 177-191

ABSTRACT: Starting from the diffusion concept of the mechanics of oxidation (OX) of wüstite (FeO) with the formation of a layer of magnetite (Fe_3O_4) and hematite (Fe_2O_3) a formula of the rate of growth of the layer of Fe_3O_4 and Fe_2O_3 in the oxidation of FeO was developed: $K_1 = (B + C\ \eta_2)L_1$, where K_1 is the constant for the rate of the growth of the layer of Fe_2O_3 and Fe_3O_4; B and C are the coefficients of the growth of the layers of Fe_3O_4 and Fe_2O_3, respectively; η_2 and L_1 are constant quantities. It is demonstrated that the rate of OX of FeO follows a parabolic law and that the ratio of the thickness of the layer of Fe_3O_4 to that of Fe_2O_3 for the duration of the process of OX should remain constant and equal to C/B_2. On the basis of experimental data on the rate of OX of Fe the

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SOV/137-58-9-19467

Rate of Oxidation of Wüstite at Elevated Temperatures

relationship between the rate of scale formation on Fe and the rate of OX of FeO to Fe_3O_4 and Fe_2O_3 is expressed by the following equations: $K_1 = K \cdot 4.78 \cdot (\ell_2 + \ell_3)/(\ell_1 + \ell_2 + \ell_3)$, where K is the constant of the rate of OX of Fe; ℓ_1, ℓ_2, ℓ_3 are the respective thicknesses of the layers of FeO, Fe_3O_4, and Fe_2O_3. The rate of OX of FeO in air humidified to 10-15 mol % in the 800-1100°C range and in dry air at 860-900° was determined experimentally. The growth of separate layers of Fe_3O_4 and Fe_2O_3 was determined. It is demonstrated that the humidity of the air has no noticeable effect on the rate of OX of FeO and that the experimental data agree well with the theoretical conclusions.

G.M.

1. Iron oxides--Oxidation 2. Iron oxides--Temperature factors 3. Mathematics

Card 2/2

TIKHOMIROV, V.I., doktor khim. nauk; GORBUNOV, S.A., inzh.; FEDOROV, A.K., inzh.; BOGDANOV, V.N., inzh.

Character of nonmetallic inclusions during the butt welding of pipe heated by high-frequency currents. Svar. proizv. no.11:10-12 N'63. (MIRA 17:5)

1. Leningradskiy ordena Lenina gosudarstvennyy universitet imeni A.A. Zhdanova (for Tikhomirov, Gorbunov). 2. Nauchno-issledovatel'skiy institut tokov vysokoy chastoty im. V.P. Vologdina (for Fedorov, Bogdanov).

ACCESSION NR: AP4031096 S/0186/64/006/002/0173/0181

AUTHOR: Tikhomirov, V. I.; Kuznetsova, A. A.; Batorovskaya, E. D.

TITLE: Extraction of uranium (VI) with n-trioctylamine (TOA) in the presence of certain cations. I. Nitric acid solutions.

SOURCE: Radiokhimiya, v. 6, no. 2, 1964, 173-181

TOPIC TAGS: uranium (VI), extraction, trioctylamine, salting out agent, nitrate, cation charge, cation radius, partition coefficient, distribution coefficient, nitric acid

ABSTRACT: The effect of different concentrations of nitrates in aqueous nitric acid solutions containing uranyl nitrate on the extraction of the U(VI) from these solutions with TOA was investigated. A 0.537 M solution of TOA in CCl_4 was used as the organic extractant; 0.05-8 M aqueous nitric acid solutions, less than 0.02 M uranyl nitrate, and different concentrations of potassium, ammonium, lithium, strontium, calcium, cadmium, zinc, nickel, cobalt, magnesium and aluminum nitrates were used. The U(VI) in water was determined colorimetrically with arsenazo I or arsenazo III and in the organic phase with arsenazo III. In the

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ACCESSION NR: AP4031096

extraction of U(VI) from HNO_3 solutions with TOA, as in extraction with oxygen-containing extractants, the salting out action in a constant concentration of nitrates and HNO_3 increases with an increase in the charge of the salting agent cation and increases as the cation radius decreases. The effectiveness of the salting out agent decreases as the covalency of the reaction of the cation with the vicinal water molecules decreases. As the acidity of the aqueous phase increases, the effect of the nature of the salting agent cation is less definite; at nitrate concentrations above 7-9 gm.ions/l the partition coefficient decreases independently of the nature of the cation of the salting out agent and independently of the HNO_3 concentration. Orig. art. has: 3 tables, 3 figures and 1 equation.

ASSOCIATION: None

SUBMITTED: 24Nov62 DATE ACQ: 30Apr64 ENCL: 00

SUB CODE: GC NO REF SOV: 015 OTHER: 012

Card 2/2

ACCESSION NR: AP4031097 S/0186/64/006/002/0182/0187

AUTHOR: Tikhomirov, V. I.; Kuznetsova, A. A.; Batorovskaya, E. D.

TITLE: Extraction of uranium (VI) with n-trioctylamine (TOA) in the presence of certain cations. II. Hydrochloric acid solutions.

SOURCE: Radiokhimiya, v. 6, no. 2, 1964, 182-187

TOPIC TAGS: uranium (VI) extraction, trioctylamine extraction, salting out agent, chloride, cation radius, cation charge, salting out agent concentration, partition coefficient, hydrochloric acid, distribution coefficient

ABSTRACT: The authors continued their study (Radiokhimiya, 6, 2, 173, 1964) of the extraction of uranium (VI) with TOA from acid solutions and the effect of salting out agents using hydrochloric acid solutions containing different concentrations of potassium, ammonium, sodium, lithium, strontium, calcium, magnesium and aluminum chlorides. A 0.10 M solution of TOA in CCl_4 was used as the extractant. The behavior of the chloride and nitrate salting out agents in the extraction of uranium (VI) with TOA from HCl and HNO_3 solutions, respectively, is analgous, i.e. the salting out corresponds to a decrease in the radius of the

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ACCESSION NR: AP4031097

cation and increases with increase in the cation charge. However, the nature of the cation of the salting out agent is more distinct in the case of the nitrates. Increasing the HCl concentration to 4 M increases the partition coefficient of uranium (VI). With increasing concentration of the salting out agent, lg deviates from a straight line. This is attributed to a decrease in the concentration of free extractent (TOA·HCl) because of the extraction of HCl in the organic phase. Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: None

SUBMITTED: 24Nov62 DATE ACQ: 30Apr64 ENCL: 00

SUB CODE: GC NO REF SOV: 003 OTHER: 001

Card 2/2

S/0186/64/006/002/0187/0191

ACCESSION NR: AP4031098

AUTHOR: Tikhomirov, V. I.; Kuznetsova, A. A.; Batorovskaya, E. D.

TITLE: Extraction of uranium (VI) with n-trioctylamine (TOA) in the presence of certain cations. III. Sulfuric acid solutions.

SOURCE: Radiokhimiya, v. 6, no. 2, 1964, 187-191

TOPIC TAGS: uranium VI, extraction, trioctylamine extraction, distribution coefficient, acid solution, sulfuric acid solution, uranium trioctylamine complex, salting out, particition coefficient

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ABSTRACT: The distribution of uranium (VI) between a 0.1 M solution of TOA in and 0.05, 1 and 2 N H_2SO_4 solutions to which different amounts of the sulfates of lithium, sodium, ammonium, magnesium and aluminum were added was determined. This is a continuation of similar work using nitric and hydrochloric acid solutions (Radiokhimiya, 6, 2, 173 and 182, 1964. On extracting the U(VI)TOA complex from sulfuric acid solutions, the addition of sulfates decreases the distribution coefficient α regardless of the concentration and nature of the cation. There is however a clear relationship between the reverse α and the

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