ARKHIPOV, K.N.; BELOUS, A.A.; YAICHKOV, K.M., kandidat tekhnicheskikh nauk, retsenzent; GORBACHEV, I.N., inzhener-polkovnik, redaktor; SHPAYER, A.L., redaktor; LYUDKOVSKAYA, N.I., tekhnicheskiy redaktor.

[Fire prevention in enterprises of the building materials industry] Protivopozharnaia tekhnika na predpriiatiiakh promyshlennosti stroitel'nykh materialov. Izd. 3-e, dop.i ispr. Moskva, Gos.izd-vo lit-ry po stroit.materialam, 1955.254 p. (MLRA 9:5)
(Building material industry) (Fire prevention)

ARKHIPOV, K.N.

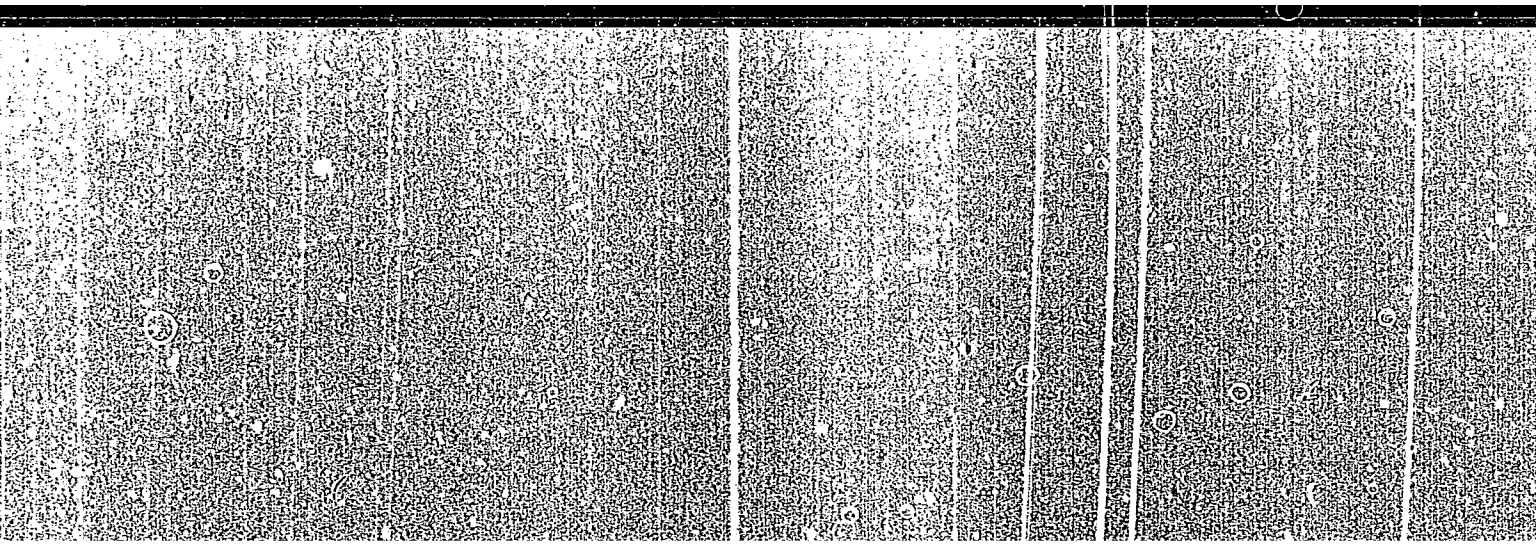
MAKSIMOV, Vladimir Fedorovich, dotsent, kandidat tekhnicheskikh nauk; ROYTMAN, K.Ya., retsenzent; SHISHOV, I.A., retsenzent; ROMANENKO, V.A., retsenznet; MALYSHEV, K.N., redaktor; ARKHIPOV, K.N., redaktor; SARMATSKAYA, G.I., redaktor izdatel'stva; SHITS, V.P., tekhnicheskiy redaktor

[Safety engineering and fire prevention in the paper industry] Tekhnika bezopasnosti i protivopozharnaia tekhnika v tselliulozno-bumazhnom proizvodstve. Moskva, Goslesbumizdat, 1956. 242 p. (MLRA 10:2)

(Factories--Fires and fire prevention)
(Paper industry--Safety measures)

ARKHIPOV, Konstantin Nikolayevich; SOLOV'YEV, Nikolay Vasil'yevich, prof.; Prinimali uchastiye: GLEBOV, A.G.; TOLCHINSKIY, S.S.; ZOLOTNITSKIY, N.D., doktor tekhn. nauk, prof., red.; VERESKUNOV, V.K., nauchnyy red.; ZHURAVLEV, B.A., red.izd-va; KASIMOV, D.Ya., tekhn. red.

[Fundamentals of dafety engineering and fire prevention in the building materials industry]Osnovy tekhniki bezopasnosti i protivopozharnoi tekhniki v promyshlennosti stroitel'nykh materialov. Pod obshchei red. N.D.Zolotnitskogo. Moskva, Gosstroiizdat, 1962. 295 p. (MIRA 16:1)
(Building materials industry--Fires and fire prevention)
(Industrial safety)



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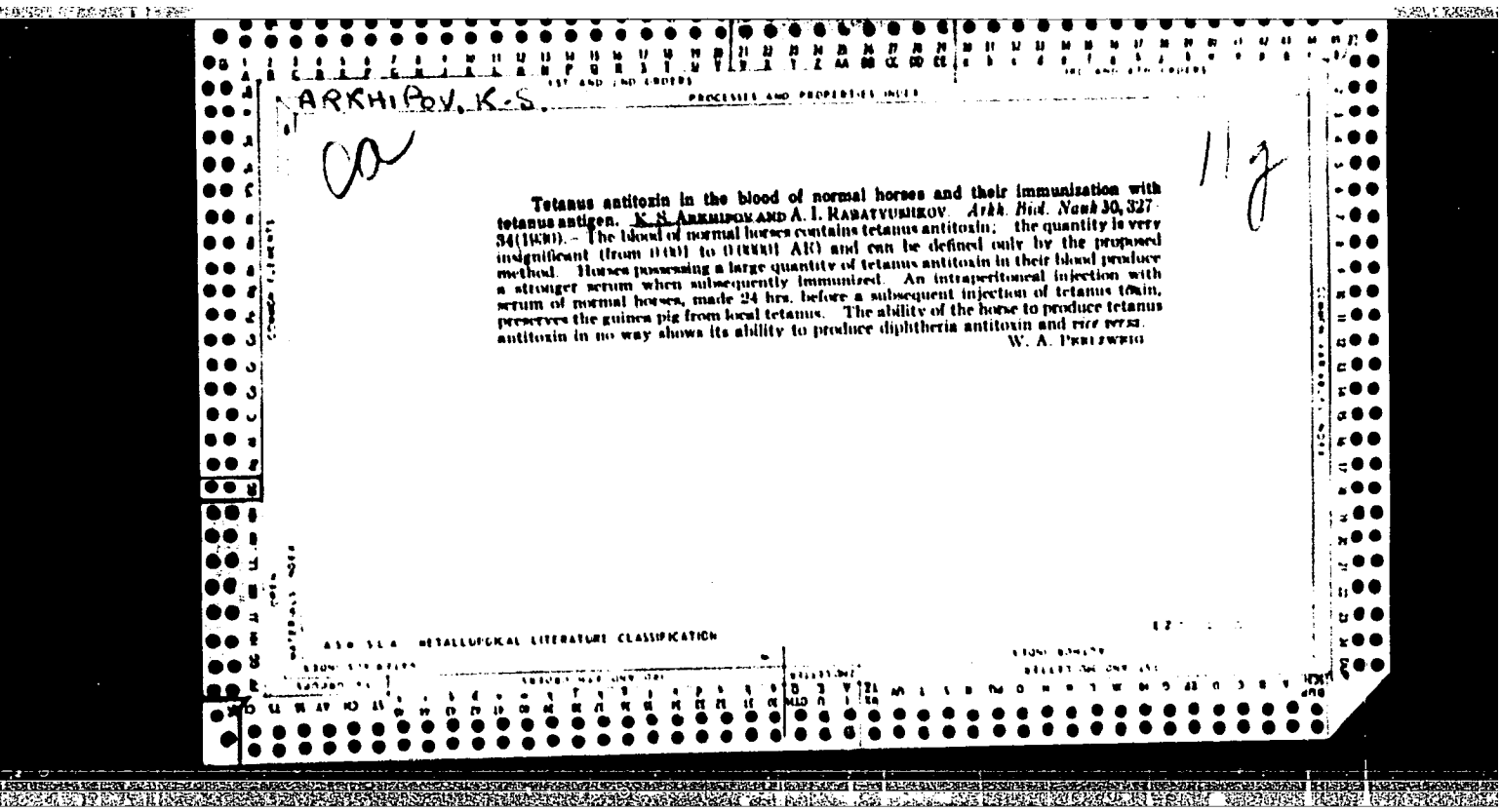
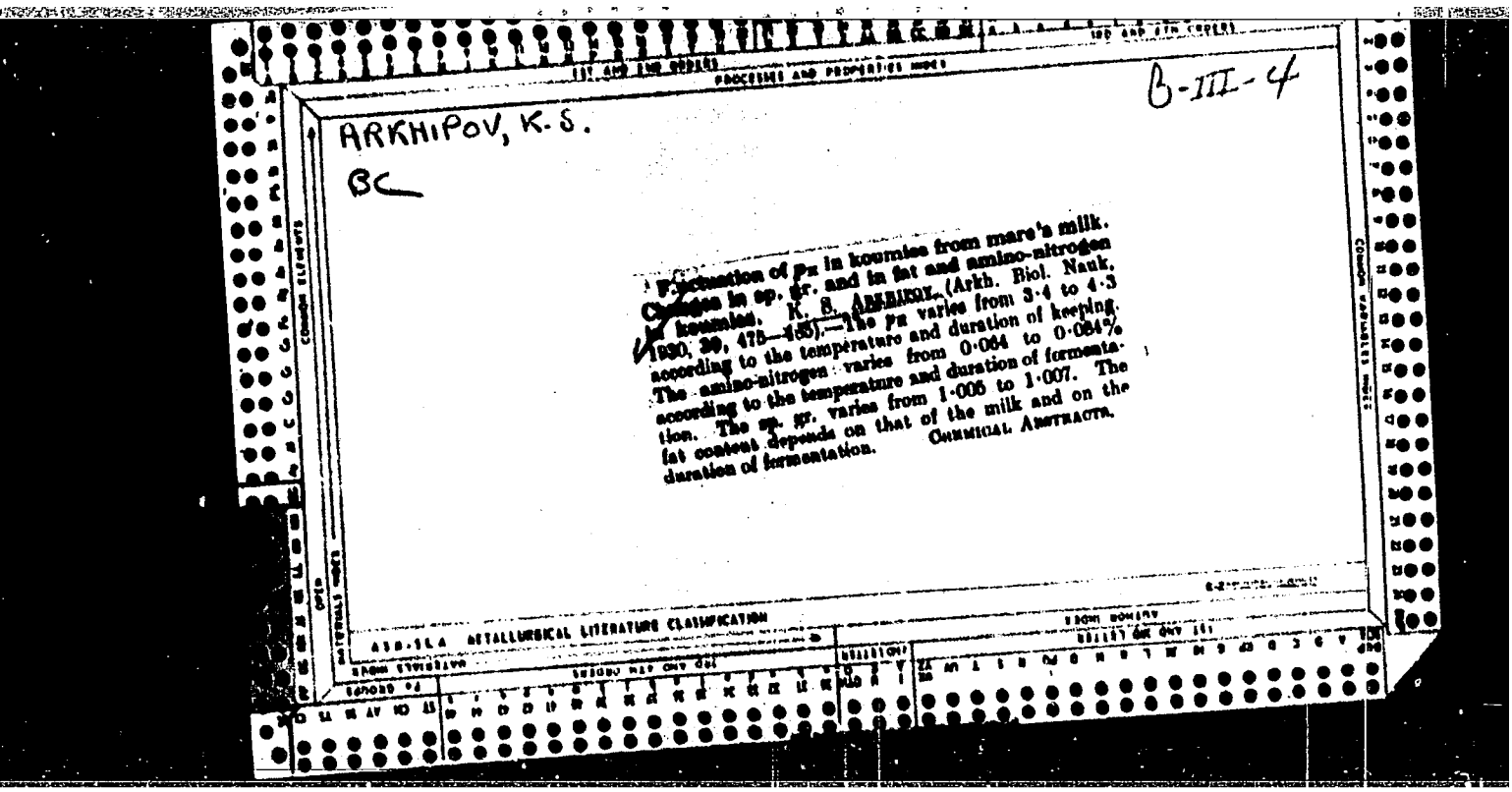


ARKHIPOV, K.S.

Tetanus antitoxin in the blood of normal horses and their immunization with tetanus antigen. K. S. Arkhipov and A. I. Rabatyumikov. *Arkh. Mikr. Nauk* 30, 327-34(1938). – The blood of normal horses contains tetanus antitoxin; the quantity is very insignificant (from 0.01 to 0.0001 AE) and can be defined only by the proposed method. Horses possessing a large quantity of tetanus antitoxin in their blood produce a stronger serum when subsequently immunized. An intraperitoneal injection with serum of normal horses, made 24 hrs. before a subsequent injection of tetanus toxin, preserves the guinea pig from local tetanus. The ability of the horse to produce tetanus antitoxin in no way shows its ability to produce diphtheria antitoxin and *vice versa*.
W. A. Pheiffer



B-III-4

ARKHIPOV, K. S.

BC

Fluctuation of Pz in kournies from mare's milk. Changes in sp. gr. and in fat and amino-nitrogen kournies. K. S. ARKHIPOV. (Arkh. Biol. Nauk, 1930, 29, 475—485).—The Pz varies from 3·4 to 4·3 according to the temperature and duration of keeping. The amino-nitrogen varies from 0·064 to 0·084% according to the temperature and duration of fermentation. The sp. gr. varies from 1·006 to 1·007. The fat content depends on that of the milk and on the duration of fermentation. CHEMICAL ABSTRACTS.

A58-15A METALLURGICAL LITERATURE CLASSIFICATION

AKULIPOV, L. I.

Dissertation: "Role of Diffused Light in Forming a Picture on Colored Multilayer Film in the Use of Clear and Nonclear Optics." Cand Tech Sci, All-Union Sci Res Cinephotographic Inst, 27 May 54. Vechernyaya Moskva, Moscow, 17 May 54.

SO: SUM 284, 26 Nov 1954

PAKHOMOV, V.Ya., inzh.; PENZIN, L.I.; ARKHIPOV, L.P.; SHILOV, A.S., starshiy prepodavatel'

The mercury-arc rectifier has been installed outside the traction substation. Elek. i tepl. tiaga 6 no.11:12-13 N '62. (MIRA 16:1)

1. Zamestitel' nachal'nika Barabinskogo uchastka energosnabzheniya (for Penzin). 2. Nachal'nik tyagovoy podstantsii Kozhurla (for Arkhipov). 3. Omskiy institut inzhenerov transporta (for Shilov). (Mercury-arc rectifiers) (Electric railroads--Substations)

ARKHIPOV, M.

JUN 25 1963

PHASE I BOOK EXPLOITATION SOV/6261

Kernenergie und Flotte; Artikelsammlung (Nuclear Energy and the Navy; Collection of Articles) [Berlin] Deutscher Militarverlag [1961]. 232 p. Errata slip inserted. 2000 copies printed.

Translation from the Russian of: Atomnaya energiya i flot.

Translator: Erika Steuk, Lieutenant Commander. Responsibility for German edition: Claus Gruszka, Engineer; Ed.: Klaus Krumsieg.

PURPOSE: This collection of articles is intended for officers of the army, coast guard, and merchant marine.

COVERAGE: The book, a translation from the Russian, contains 25 articles dealing with the application of nuclear weapons to naval combat operations. Chapters 19 and 25 have been supplemented with additional data for this edition. The devastating features of nuclear explosions are discussed. Attention is also given to the protection of personnel, ships, and coastal facilities against nuclear weapons, and to the present and future applications of nuclear

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power plants to shipping. No personalities are mentioned. There are 16 references: 10 Russian (including 3 translations from English-language sources), 1 French, 1 German, 1 English, 1 American, and 2 either English or American.

TABLE OF CONTENTS:

SOV-107-58-8-49/53

AUTHOR: Arkhipov, M.; Kozlov, N.; Kiosse, G; Kolesnikov, A. (Tashkent)

TITLE: The 6P2IS Beam Tetrode (Luchevoy tetrod 6P2IS)

PERIODICAL: Radio, 1958, Nr 8, pp 57-58 (USSR)

ABSTRACT: The authors give construction details, measurements and characteristics of the 6P2IS beam tetrode, used as an RF amplifier or generator or in the final stages of low-power transmitters. There are 2 diagrams, 2 graphs and 2 tables.

1. Tetrodes--Construction 2. Tetrodes--Physical properties
3. Tetrodes--Performance 4. Tetrodes--Applications

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Архипов, М.

21(2) PHASE I BOOK EXPLOITATION SOV/2708

Atomnaya energiya i flot; sbornik statey (Atomic Energy and the Navy; Collection of Articles) Moscow, Voyenizdat, 1959. 232 p. (Series: Nauchno-populyarnaya biblioteka) Number of copies printed not given.

Ed.: Ya. M. Kader; Tech. Ed.: A.M. Gavrilova; Ed. and Compiler: L. D. Chernous'ko, Engineer, Captain.

PURPOSE: This book is intended for the general reader.

COVERAGE: The papers in this collection discuss in popular style, and on the basis of data published in the Soviet and non-Soviet press, problems of the use of atomic and hydrogen weapons in combat operations at sea. The collection includes reports on the damaging factors of a nuclear explosion and on the immense power of this weapon of mass destruction. A number of articles are devoted to the antinuclear defense of ships and of shore objects, and to the introduction of nuclear power plants in naval vessels. Also included in the collection are papers dealing with the future prospects for naval use of nuclear energy, and with the construction of the world's first atomic icebreaker, the "Lenin", which is expected to play an important part in the further conquest

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of the Arctic regions. The collection also contains papers published in the journal Sovetskiy flot in 1955 - 1958, in revised and supplemented form.

TABLE OF CONTENTS:

PONOMAREV, A., general-polkovnik inzhenerno-tekhnicheskoy sluzhby; POKROVSKIY, G., prof., doktor tekhnicheskoy sluzhby; KUVAL'DIN, A., dots., kand. tekhnicheskikh nauk inzhener-polkovnik; MOSTOVENKO, V., dots., kand. tekhnicheskikh nauk inzhener-polkovnik; GONCHAROV, M., polkovnik; TARANTSOV, A., polkovnik; VASIL'YEV, N., polkovnik; GORDEYEV, N., kapitan 1 ranga; KOZIN, K., kapitan 1 ranga; ARKHIPOV, M., dots., kand. tekhn. nauk inzhener-podpolkovnik; SEDOV, A., dots., kand. tekhn. nauk, inzhener-podpolkovnik; MELIK-PASHAYEV, N., dots., kand. tekhn.nauk, inzhener-podpolkovnik; TIKHOMIROV, Yu., dots., kand. tekhn. nauk, inzhener-podpolkovnik; PARFENOV, V., kand. tekhn. nauk, inzhener-podpolkovnik; GEORGIYEV, A., inzh.-podpolkovnik; KRUCHININ, V., inzh.-podpolkovnik; MEKONOSHIN, N., inzh.-podpolkovnik; RYKOV, S., inzh.-podpolkovnik; SURIKOV, B., inzh.-podpolkovnik; ZHUKOV, V., inzh.-mayor; NOVIKOV, M., inzh.-mayor; SUSHKOV, Yu., inzh.-kapitan; ASTASHENKOV, P.T., inzh.-podpolkovnik; VASIL'YEV, A.A., red.; KARYAKINA, M.S., tekhn. red.

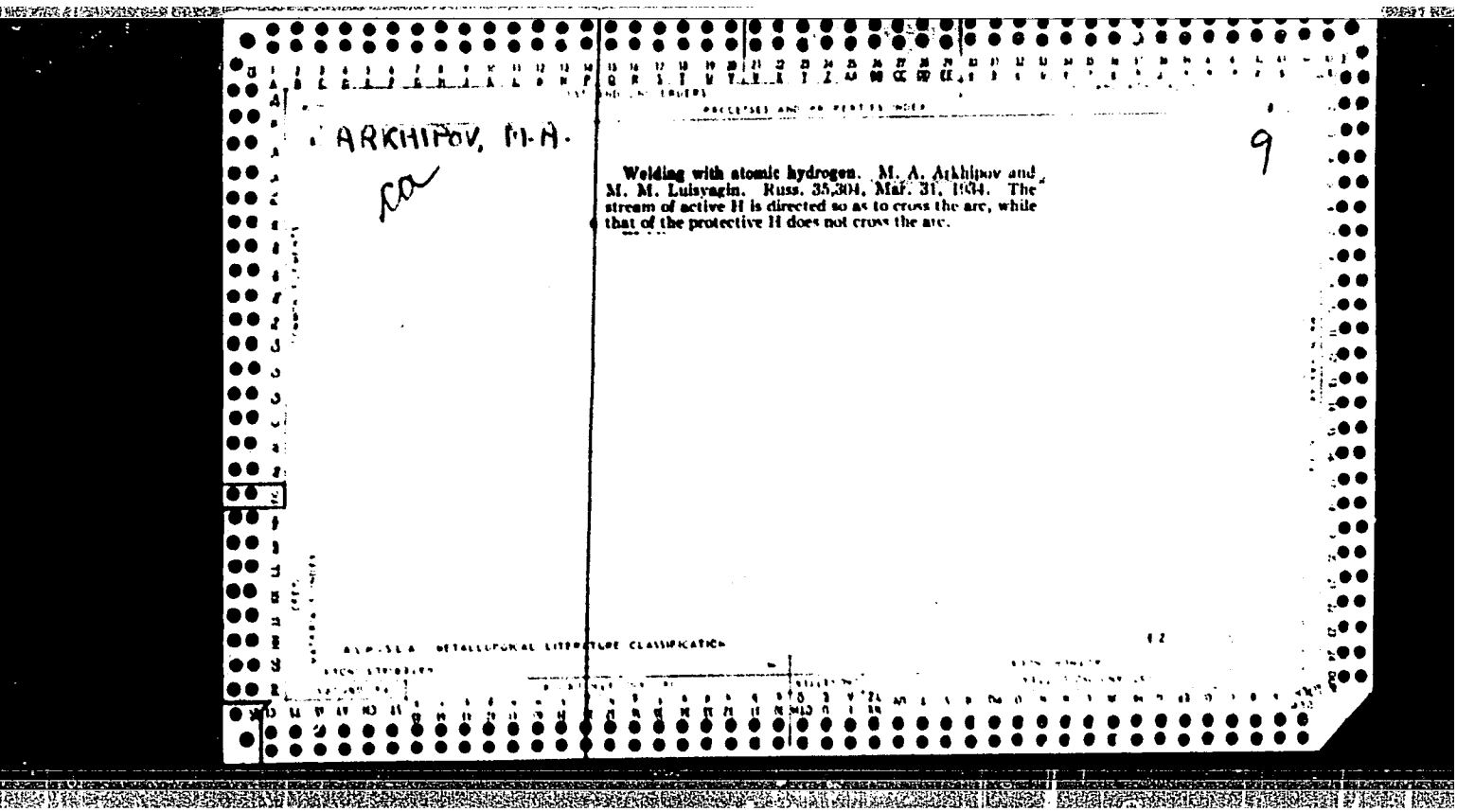
[New advances in military technology for youthful readers]Molodezhi o novom v voennoi tekhnike. Moskva, Izd-vo DOSAAF, 1961. 342 p. (MIRA 15:2)
(Rockets (Ordnance)) (Atomic weapons)
(Electronics in military engineering)

ARKHIPOV, M., inzh.-podpolkovnik, kand.tekhn.nauk

Radius of destruction of a nuclear weapon. Voen. znan. 37 no. 1:39 Ja '61. (MIRA 14:1)
(Atomic weapons)

ARKHIPOV, M., kand.tekhn.nauk, inzh.-polkovnik

Around the neutron bomb. Starsh.-serzh. no.4:32 Ap '62.
(MIRA 15:4)
(Neutron bomb)



ARKHIPOV, M.A.

9

Welding with atomic hydrogen. M. A. Arkhipov and M. M. Luisyagin. Russ. 35,304, Mar. 31, 1934. The stream of active H is directed so as to cross the arc, while that of the protective H does not cross the arc.

L 31973-66 EWT(m)/FSS-2/EWT(m)/EWP(w)/EWP(f)/EWP(v)/T-2/EWP(t)/ETI/EWP(k)

ACC NR: AP6014593 SOURCE CODE: UR/0017/66/000/005/0036/0037

IJP(c) FDN/JD/TT/WW/JG/EM

AUTHOR: Arkhipov, M. (Engineer; Colonel; Candidate of technical sciences; Docent)

ORG: none

TITLE: Plasma and the engine

SOURCE: Voyennyye znaniya, no. 5, 1966, 36-37

TOPIC TAGS: spacecraft propulsion, plasma propulsion, plasma engine, ion engine, ~~thermionic engine~~, cesium, fuel, ~~space propulsion~~/Zond-2 PLASMA ENGINE

ABSTRACT: The author briefly reviews the types and operating principles of plasma and ion engines for use in space, and describes in broad terms the operation of the Zond-2 plasma-engine system. Thrust, acceleration, and fuel consumption characteristics are mentioned, and cesium is described as the most suitable fuel. Two drawings are given depicting a rail-type plasma engine and a sectional-type thermionic engine. Orig. art. has: 2 figures. [LB]

SUB CODE: 21/ SUBM DATE: none

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ARKHIPOV, M., inzh.-polkovnik, kand.tekhnicheskikh nauk, dotsent

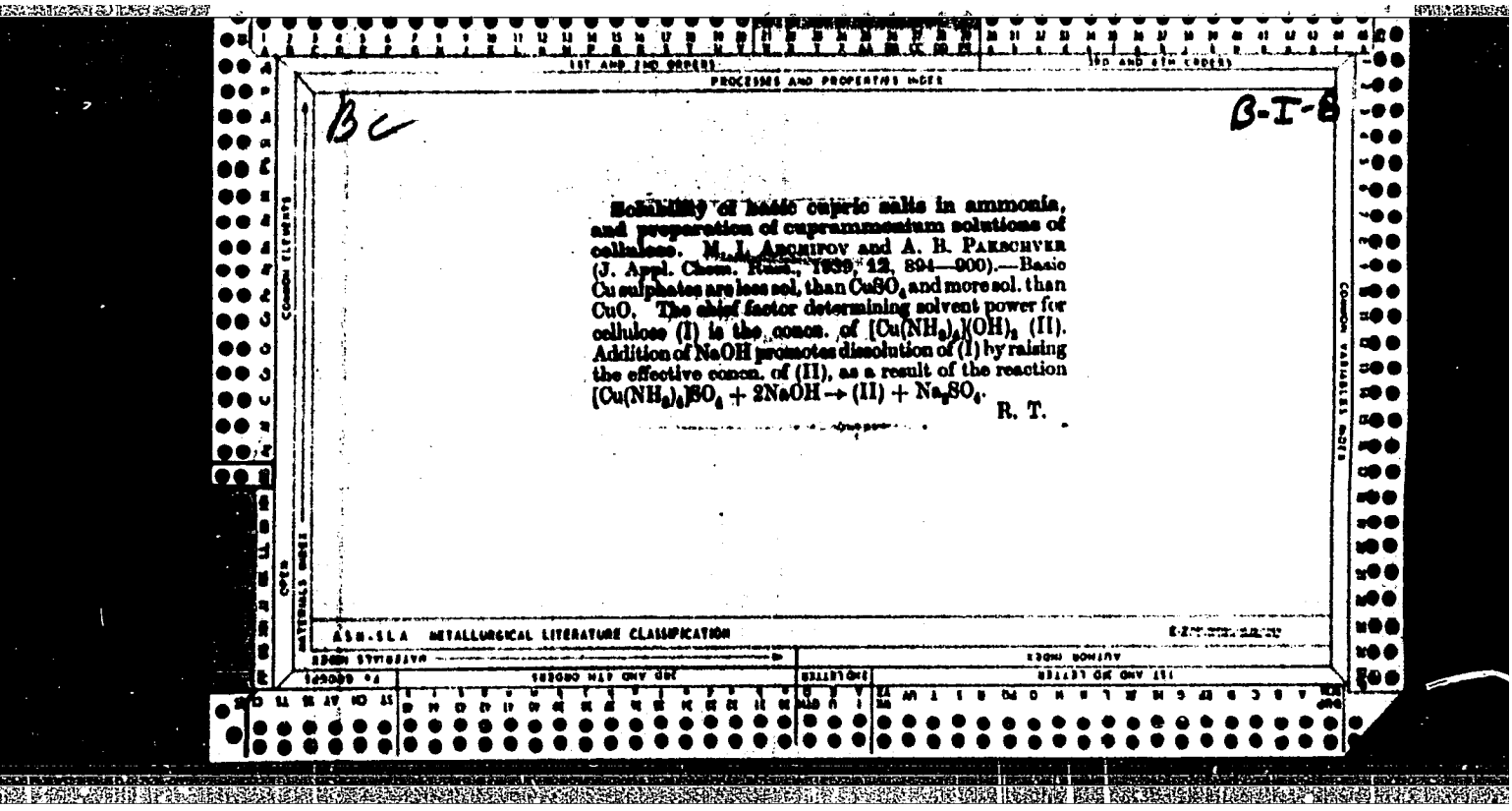
The last ones on the table. Voen.znan. 41 no.11:34 N '65.
(MIRA 18:12)

ARKHIPOV, M. I.

PROCESSES AND PROPERTIES INDEX

The function of ammonia in cuprammonium cellulose solution. M. I. Arkhipov and A. B. Pakshver. *Org. Chem. Ind.* (U. S. S. R.) 6, 322-3(1939).—Some addnl. exptl. evidence is presented to show that the viscosity of cuprammonium spinning solns. of cellulose decreases with NH_4OH concn. This effect is more pronounced with stronger cellulose solns. (cf. Pakshver, *et al.*, *C. A.* 31, 7644[9]; 32, 1090[1]) Chas. Blanc

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



PROCESSES AND PROPERTIES INDEX

Bc

B-I-8

Solubility of basic cupric salts in ammonia, and preparation of cuprammonium solutions of cellulose. M. I. Archipov and A. B. Paschover (J. Appl. Chem. Russ., 1939, 12, 894—900).—Basic Cu sulphates are less sol. than $CuSO_4$ and more sol. than CuO. The chief factor determining solvent power for cellulose (I) is the concn. of $[Cu(NH_3)_4](OH)_2$ (II). Addition of NaOH promotes dissolution of (I) by raising the effective concn. of (II), as a result of the reaction $[Cu(NH_3)_4]SO_4 + 2NaOH \rightarrow (II) + Na_2SO_4$.

R. T.

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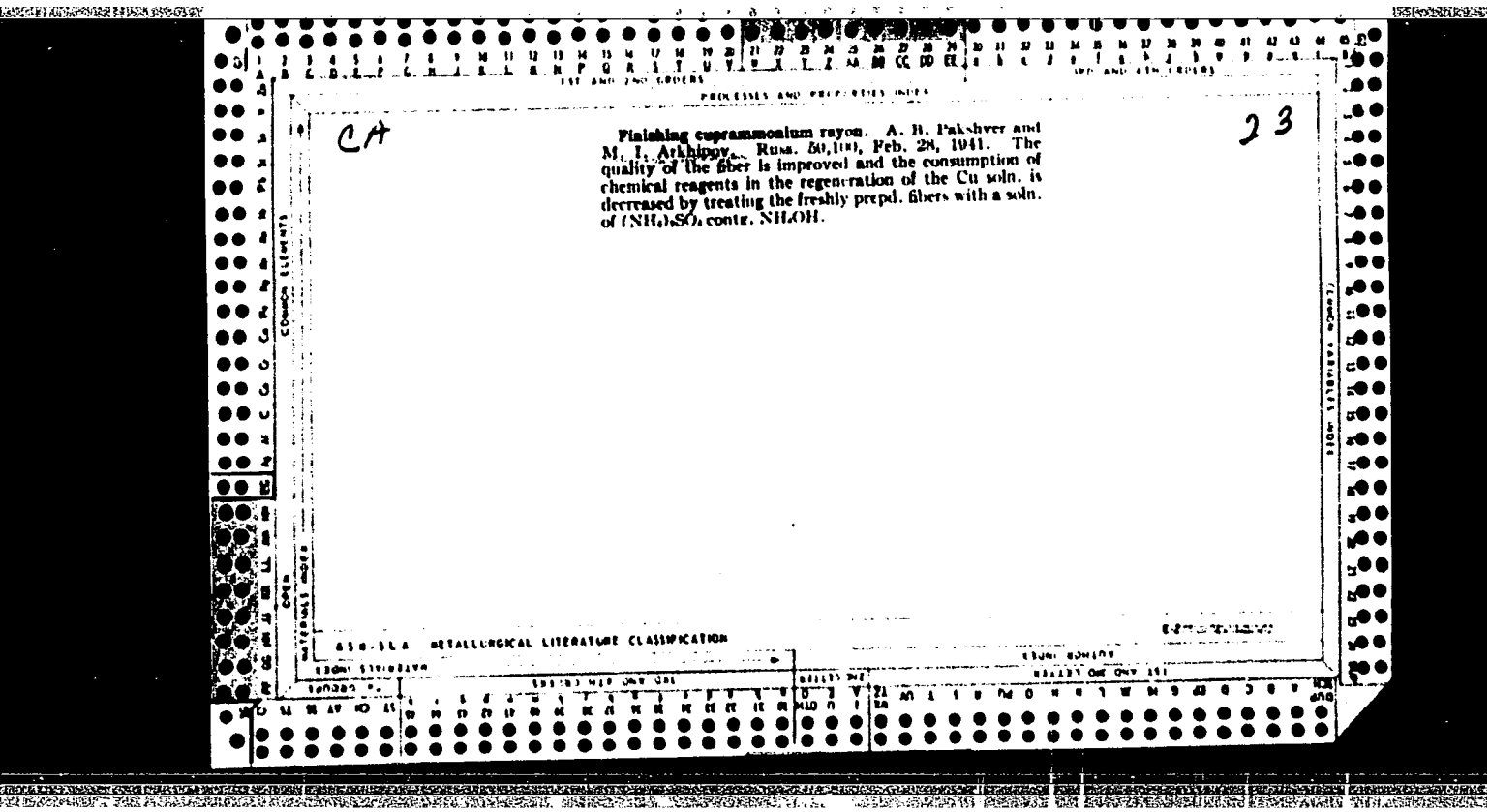
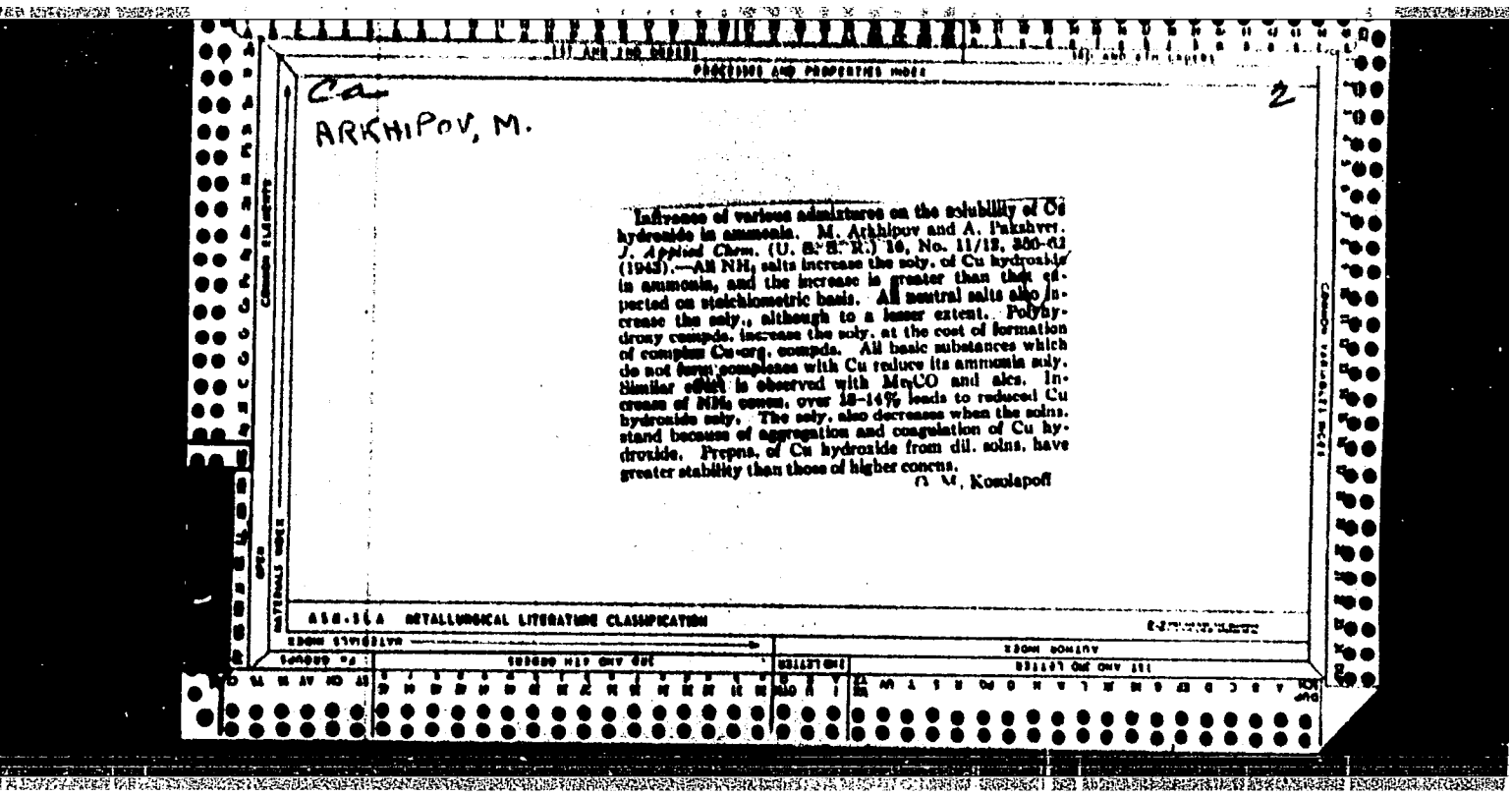


CA

23

Finishing cuprammonium rayon. A. B. Pakshver and M. I. Arkhipov. Russ. 50,111, Feb. 28, 1941. The quality of the fiber is improved and the consumption of chemical reagents in the regeneration of the Cu soln. is decreased by treating the freshly prepd. fibers with a soln. of $(NH_4)_2SO_4$ contg. NH_4OH.



Cu

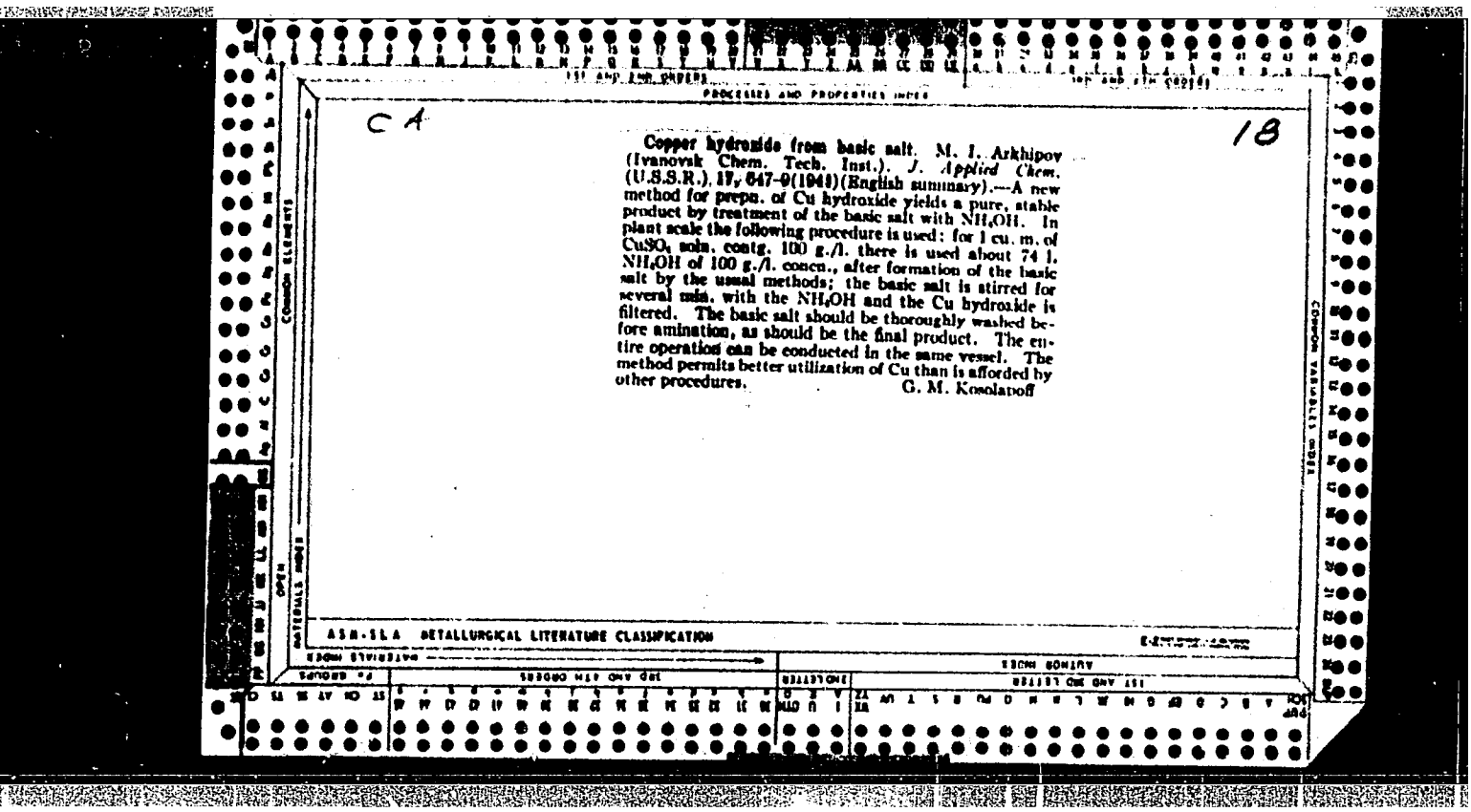
ARKHIPOV, M.

2

Influence of various admixtures on the solubility of Cu hydroxide in ammonia. M. Arkhipov and A. Pakshver. *J. Applied Chem.* (U. S. S. R.) 16, No. 11/12, 350-61 (1943).—All NH_4 salts increase the soly. of Cu hydroxide in ammonia, and the increase is greater than that expected on stoichiometric basis. All neutral salts also increase the soly., although to a lesser extent. Polyhydroxy compds. increase the soly. at the cost of formation of complex Cu-org. compds. All basic substances which do not form complexes with Cu reduce its ammonia soly. Similar effect is observed with $MeCO$ and alcs. Increase of NH_4 concn. over 13–14% leads to reduced Cu hydroxide soly. The soly. also decreases when the solns. stand because of aggregation and coagulation of Cu hydroxide. Prepns. of Cu hydroxide from dil. solns. have greater stability than those of higher concns.

G. M. Kosolapoff

A58.16A METALLURGICAL LITERATURE CLASSIFICATION



CA

18

Copper hydroxide from basic salt. M. I. Arkhipov (Ivanovsk Chem. Tech. Inst.). *J. Applied Chem. (U.S.S.R.)*, 17, 647-9(1944)(English summary).—A new method for prepn. of Cu hydroxide yields a pure, stable product by treatment of the basic salt with NH_4OH. In plant scale the following procedure is used: for 1 cu. m. of $CuSO_4$ soln. contg. 100 g./l. there is used about 74 l. NH_4OH of 100 g./l. concn., after formation of the basic salt by the usual methods; the basic salt is stirred for several min. with the NH_4OH and the Cu hydroxide is filtered. The basic salt should be thoroughly washed before amination, as should be the final product. The entire operation can be conducted in the same vessel. The method permits better utilization of Cu than is afforded by other procedures.

G. M. Kosolapoff

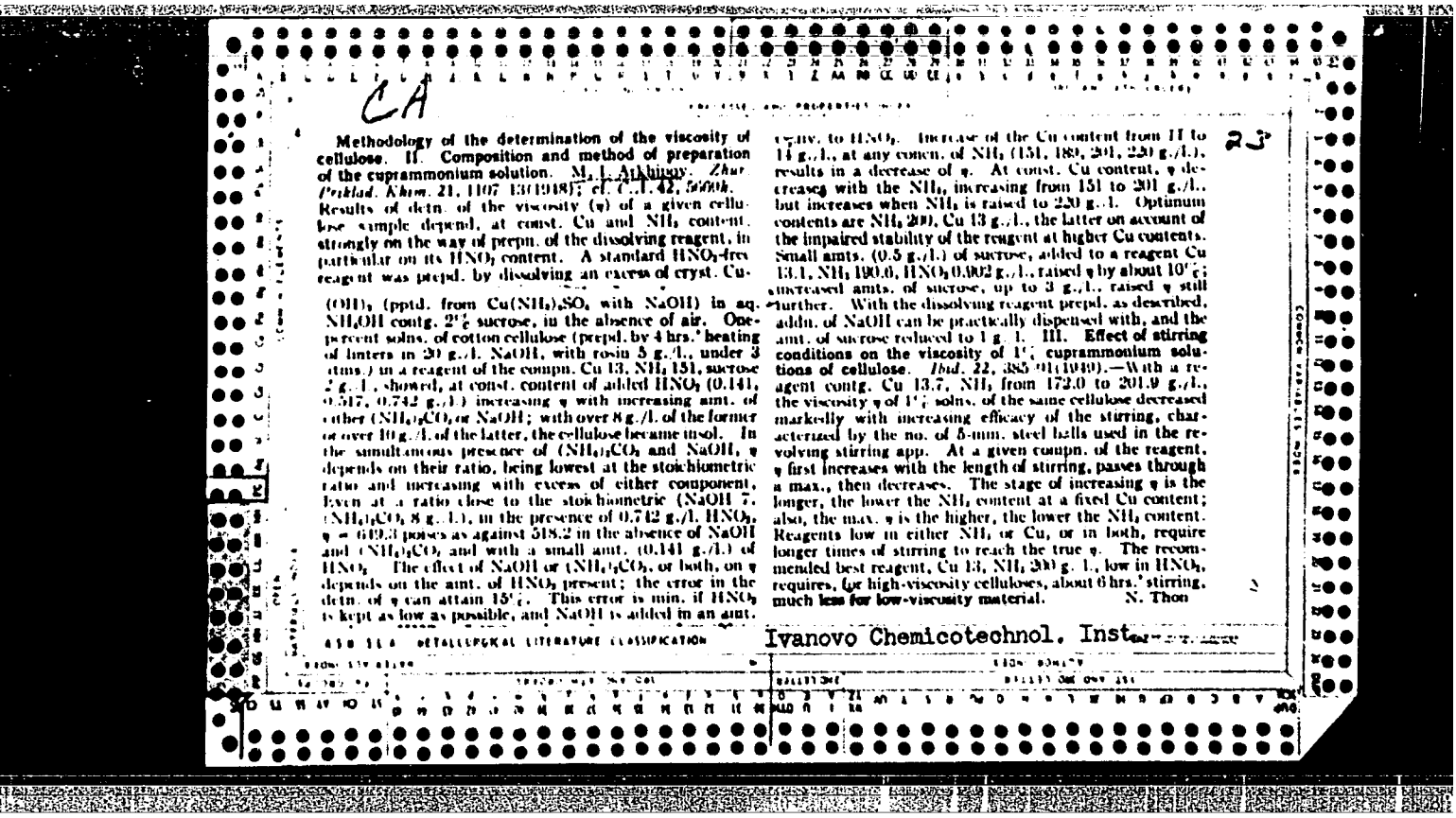
PROCESSES AND PROPERTIES INDEX

Solubility of copper hydroxide in aqueous ammonia solutions. M. I. Akhtyamov. *Zhur. Priklad. Khim.* (J. Applied Chem.) 21, 838-46(1948). A product of a compn. very close to $Cu(OH)_2 \cdot H_2O$ was obtained by dissolving $CuSO_4 \cdot 5H_2O$ in 12-14% NH_4OH, with the $CuSO_4$ in slight excess over the ratio corresponding to $[Cu(NH_3)_4]SO_4$, filtration, and slow (overnight) pptn. with NaOH in slight excess over the amt. needed for $[Cu(NH_3)_4]SO_4 + 2\ NaOH \rightarrow [Cu(NH_3)_4](OH)_2 + Na_2SO_4$, followed by $[Cu(NH_3)_4](OH)_2 \rightarrow Cu(OH)_2 + 4NH_3$, decanting and repeatedly washing with cold H_2O until complete disappearance of NH_3, NaOH, and SO_4^{--}, and drying over $CaCl_2$. The soly. *S* of this prepn. in solns. of 50, 100, and 200 g./l. NH_3, detd. after 3-18 hrs. standing, by iodimetry of the filtrate, is neither const. nor reproducible, even for the same batch, and varies even more for different prepns. It increases with the concn. of NH_3, e.g., at 20°, NH_3 50, 100, and 150 g./l., sample of 15 g./l. $Cu(OH)_2$, 18 hrs., *S* = 3.56, 7.70, and 8.90 g./l.; at the same concn. of NH_3, *S* increases with the amt. of $Cu(OH)_2$ taken, e.g., NH_3 200, $Cu(OH)_2$ 15, 30, 50, 80, 120 g./l., *S* = 8.90, 10.40, 13.58, 13.80, 14.33 g./l. In terms of the time of standing, *S* becomes const. after 3 hrs. in NH_3 50 g./l., but in NH_3 100 and 200, *S* reaches a max. in 3 hrs. and then decreases. Further, *S* decreases with rising temp., e.g., in NH_3 100, at 15, 20, and 25°, *S* = 8.20, 7.90, and 7.60. It decreases sharply in a 2nd detn., made with the residue from a 1st detn. Addns. of NH_4 salts (NH_4CNS, $(NH_4)_2CO_3$, $(NH_4)_2SO_4$) increase *S* to a greater extent than would correspond to the reaction $[Cu(NH_3)_4](OH)_2 + 2NH_4X \rightarrow [Cu(NH_3)_4]X_2 + 2NH_4OH$; e.g., at 20°, NH_3 100, $(NH_4)_2SO_4$ 0, 5, 10, 20, *S* = 7.62, 10.06, 13.90, 18.40 g./l. Carbohydrates and triethanolamine increase *S* markedly, e.g., at 20°, NH_3 91.0, glucose 0 and 10, *S* = 8.00 and 16.10; sucrose 0 and 10, *S* = 8.01 and 10.30; NH_3 200, triethanolamine (30%) 0, 2, 5, and 10, *S* = 9.73, 9.92, 10.81, and 11.20. At NH_3 100, NaOH 0, 5, 10, and 20, *S* = 6.79, 5.79, 4.08, and 4.66. Pyridine has likewise a lowering effect on *S*, e.g., NH_3 100, C_5H_5N 0, 10, 25, 50 g./l., *S* = 7.87, 7.38, 7.12, 6.50; at NH_3 200, with $PhNH_2$ 0, 5.1, 10.2, 20.4, *S* = 9.73, 9.65, 9.65, 9.12. Alcs. (MeOH, EtOH, PrOH) and Me_2CO lower *S*, e.g., at 20°, NH_3 200, 18 hrs., EtOH 0, 7.8, 62.4, *S* = 9.85, 8.15, 7.27. The most likely interpretation is the presence, in addn. to cryst. $Cu(OH)_2$, of varying amts. of colloidal hydroxide, undergoing peptization by $[Cu(NH_3)_4](OH)_2$. Carbohydrates raise *S* through formation of complexes with Cu. N. Thon

"Solubility of Copper Hydroxide in an Aqueous Solution of Ammonia,"

Ivanovo Chem Technol Inst.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

Methodology of the determination of the viscosity of cellulose. II. Composition and method of preparation of the cuprammonium solution. M. I. Arkhipov. *Zhur. Prikład. Khim.* 21, 1107-13(1948); cf. C.A. 42, 5000h. Results of detn. of the viscosity (η) of a given cellulose sample depend, at const. Cu and NH_3 content, strongly on the way of prepn. of the dissolving reagent, in particular on its HNO_3 content. A standard HNO_3-free reagent was prepd. by dissolving an excess of cryst. Cu(OH)$_2$ (pptd. from $Cu(NH_4)_2SO_4$ with NaOH) in aq. NH_4OH contg. 2% sucrose, in the absence of air. One-percent solns. of cotton cellulose (prepd. by 4 hrs.' heating of linters in 20 g./l. NaOH, with rosin 5 g./l., under 3 atms.) in a reagent of the compn. Cu 13, NH_3 151, sucrose 2 g./l., showed, at const. content of added HNO_3 (0.141, 0.517, 0.742 g./l.) increasing η with increasing amt. of either $(NH_4)_2CO_3$ or NaOH; with over 8 g./l. of the former or over 10 g./l. of the latter, the cellulose became insol. In the simultaneous presence of $(NH_4)_2CO_3$ and NaOH, η depends on their ratio, being lowest at the stoichiometric ratio and increasing with excess of either component. Even at a ratio close to the stoichiometric (NaOH 7, $(NH_4)_2CO_3$ 8 g./l.), in the presence of 0.742 g./l. HNO_3, η = 609.3 poises as against 518.2 in the absence of NaOH and $(NH_4)_2CO_3$ and with a small amt. (0.141 g./l.) of HNO_3. The effect of NaOH or $(NH_4)_2CO_3$, or both, on η depends on the amt. of HNO_3 present; the error in the detn. of η can attain 15%. This error is min. if HNO_3 is kept as low as possible, and NaOH is added in an amt. equiv. to HNO_3. Increase of the Cu content from 11 to 14 g./l., at any concn. of NH_3 (151, 189, 201, 230 g./l.), results in a decrease of η. At const. Cu content, η decreases with the NH_3 increasing from 151 to 201 g./l., but increases when NH_3 is raised to 230 g./l. Optimum contents are NH_3 200, Cu 13 g./l., the latter on account of the impaired stability of the reagent at higher Cu contents. Small amts. (0.5 g./l.) of sucrose, added to a reagent Cu 13.1, NH_3 190.0, HNO_3 0.302 g./l., raised η by about 10%; increased amts. of sucrose, up to 3 g./l., raised η still further. With the dissolving reagent prepd. as described, addn. of NaOH can be practically dispensed with, and the amt. of sucrose reduced to 1 g./l. III. **Effect of stirring conditions on the viscosity of 1% cuprammonium solutions of cellulose.** *Ibid.* 22, 385-91(1949).—With a reagent contg. Cu 13.7, NH_3 from 172.0 to 201.9 g./l., the viscosity η of 1% solns. of the same cellulose decreased markedly with increasing efficacy of the stirring, characterized by the no. of 5-mm. steel balls used in the revolving stirring app. At a given compn. of the reagent, η first increases with the length of stirring, passes through a max., then decreases. The stage of increasing η is the longer, the lower the NH_3 content at a fixed Cu content; also, the max. η is the higher, the lower the NH_3 content. Reagents low in either NH_3 or Cu, or in both, require longer times of stirring to reach the true η. The recommended best reagent, Cu 13, NH_3 200 g./l., low in HNO_3, requires, for high-viscosity celluloses, about 6 hrs.' stirring, much less for low-viscosity material. N. Thon

Ivanovo Chemicotechnol. Inst.

Arkhipov, M. I.

Innovation in the preparation of spinning solutions. M. I. Arkhipov and V. M. Kharitinov. *Tekstil. Prom.* 9, No. 8, 6-8(1949).—Possible technological innovations in the prepn. of spinning solns. of cellulose in an aq. ammoniacal soln. of $Cu(OH)_2$, resulting from increased NH_3 concn. in the cuprammonium soln., homogenization for 2-4 hrs., and filtration prior to NH_3 removal, are discussed in detail

Elisabeth Barabash

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CA

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Cupro-ammoniacal solutions of cellulose. I. The effect of ammonia and alcohol on the rotation of the plane of polarization of cupro-ammoniacal solutions of cellulose. N. I. Arkhipov and V. P. Kharitonova. *Zhur. Prikład. Khim.* (J. Applied Chem.) 22, 761-70(1949). A Cu-NH_3 soln. is not a true solvent for cellulose but is a complex system contg. a chemically unstable cuprammonium base. A change in the NH_3 concn. in the Cu-NH_3 soln. of cellulose changes the angle of rotation of the plane of polarization almost linearly to the left with high concns. of Cu and cellulose; with low concns. of Cu and cellulose, the angle is decreased at first and then increased. The addn. of EtOH has the same effect as changing the NH_3 concn. A more complex relation is observed between the tendency toward rotation of a Cu-NH_3 soln. of sucrose and the concn. of the components and may be explained by the introduction of Cu into both monomers and the formation of compds. of different planes of rotation. The change in the angle of rotation in relation to the NH_3 or EtOH concn. is explained by the assumption of an ionic reaction mechanism between the cellulose and the Cu-NH_3 soln. Paul W. Howerton

1951

60/49T112

ARKHIPOV, M.I.

USSR/Physics
Cellulose
Viscosity

Apr 49

"Methods for Determining the Viscosity of Cellulose: III, Effects of Mixing on the Viscosity of Cuprammonium Cellulose Solution," M. I. Arkhipov, Ivanovo Chemicotechnol Inst, 6 3/4 pp

"Zhur Prik Khim" Vol XXII, No 4

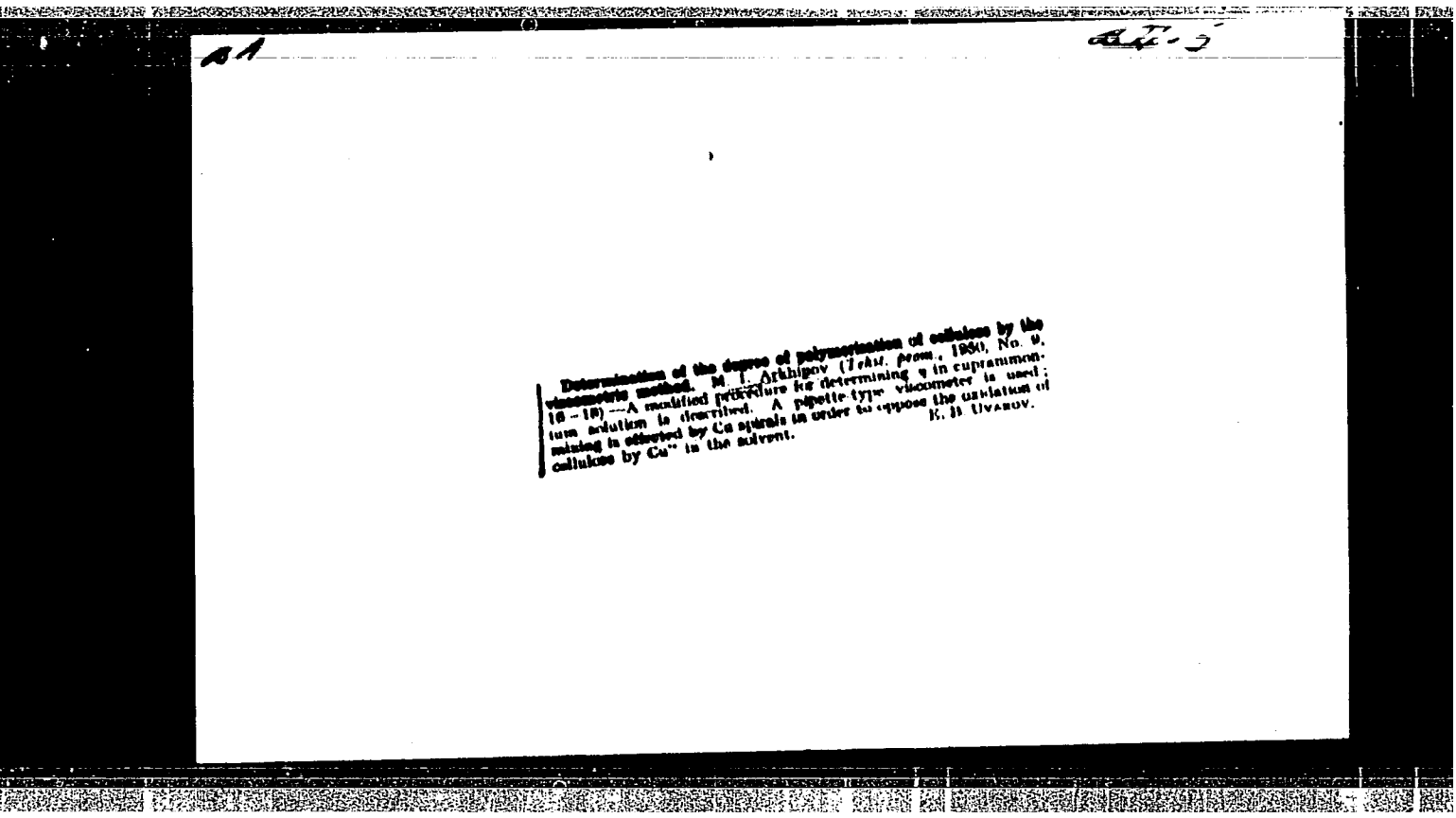
Intensity and duration of mixing greatly influence the viscosity of 1% cuprammonium solutions of cellulose and the preciseness of its determination. This influence is greater, the higher the viscosity of the cellulose. Submitted 13 Apr 48.

60/49T112

C A

Effect of ammonia on the absorption of copper by cellulose and its solubility in cuproammoniacal solutions. M. I. Arkhipov and V. P. Kharitonova. *Zhur. Prikhod.* Khim. (J. Applied Chem.) 22, 1030-6(1949).—The max. amt. of Cu absorbed by cellulose, per mole $C_6H_{10}O_5$, detd. by analysis of the initial soln. and of the filtrate after complete absorption, not only increases with the concn. of Cu but, at const. Cu content, varies strongly with the concn. of NH_3. In solns. incapable of dissolving the cellulose (Cu 6.28-36.2 millimoles/l.), absorption of Cu first decreases with increasing NH_3, passes through a min., and then increases with further increase in NH_3; with increasing Cu content, the min. shifts to increasingly higher NH_3 concns. Cellulose that has reached equil. in a soln. (after about 1 hr.) does not take up more Cu when immersed in a fresh soln. of the same compn., i.e., cellulose can be satd. with Cu towards a soln. of given Cu and NH_3 content. On the other hand, fresh cellulose immersed in a soln. whose Cu content has been decreased by reaction with cellulose does take up Cu. With increasing depletion of Cu and corresponding increase of the relative amt. of NH_3, the absorption first decreases, then increases rapidly. In solns. rich in Cu, the soly. of cellulose [expressed as a percentage (relative to the original wt. of the sample) of the quantity which goes into soln. in 1 hr., and detd. by careful mild pptn. of the filtrate (supplemented by settling)], increases very strongly with increasing NH_3 content of the soln. The threshold NH_3 content at which rapid soln. begins is lower, the higher the Cu content. Thus, with Cu 0.036, 0.08, and 0.07 *M*/l., the NH_3 threshold is approx. 11, 7, and 4 *M*/l., resp. Lowering of the soly. through decrease of the Cu content can be compensated by a corresponding increase of the NH_3 content; the greater the NH_3 content, the smaller the soly. Thus, in order to maintain a "soly." (in the sense defined above) of 30%, with the Cu content decreasing from 0.07 to 0.036 *M*/l., it is necessary to increase NH_3 4 times, whereas, between the same 2 extreme Cu contents, the increase of the NH_3 necessary to maintain the soly. at 50 and 65% is only about 1.7- and 1.3-fold, resp. Soln. of cellulose takes place in 2 steps, absorption of Cu and solvation of the Cu-cellulose complex formed. The 1st step can be carried out also in a soln. of $Cu(OH)_2$ in strong NaOH, but this soln. is unable to solvate the complex. If, however, cellulose absorbs Cu from a $Cu(OH)_2$ + NaOH soln., the solvent removed, and the "coppered" sample immersed in concd. NH_4OH, soln. takes place immediately. Consequently, NH_3 not only promotes absorption of Cu by cellulose but is also an effective solvating agent for the Cu-cellulose complex.

N. Thon



Determination of the degree of polymerization of cellulose by the viscometric method. M. T. Arkhipov (*Tekst. prom.*, 1950, No. 9, 18 – 19).—A modified pipette-type viscometer is used; mixing is effected by Cu spirals in order to oppose the oxidation of cellulose by Cu^{++} in the solvent.

K. B. Ivanov.

CA ARKHIPOV, M.

23

Reaction of cellulose with ammoniacal and alkaline solutions of metallic hydroxides A. I'shshver, M. Arkhipov, and B. Geller (Ivanovo Inst. Chem. Technol.). (*J. Applied Chem. U.S.S.R.* 23, 187-90(1950)(Engl. translation); *Zhur. Prikhad. Khim.* 23, 181-91(1950).—Cellulose (I) absorbs metallic hydroxides (II) from alk. or ammoniacal solns. (best from alk. soln.); in alk. soln. the absorption increases in the order $Zn(OH)_2$ (III) < $Cu(OH)_2$ (IV); in NH_4 soln., the order is III < $Ni(OH)_2$ (V) < IV; the soly. of I in ammoniacal II soln. increases in the series III < $Co(OH)_2$ (VI) < V < IV; IV and VI decrease the soly. of I in NaOH, although IV is strongly absorbed from the soln.; $CO(NH_2)_2$ and C_5H_5N do not affect the soly. of I in caustic alkalies but they increase it in alk. or ammoniacal solns. of II. The increase of soly. of I in alk. or ammoniacal solns. of II is due to formation of unstable coördination compds. of $CO(NH_2)_2$ and C_5H_5N with II. Quant. I soly. data and data on absorption of II from soln. by I are given. Co was detd. by a new method as follows: 20 ml. 10% NaOH and 20 ml. 30% H_2O_2 are added to a soln. of Co II salt in a tall beaker. After the $Co(OH)_2$ has settled, the mixt. is boiled 15 min., cooled, and 25 g. KI and 25 g. H_2SO_4 are added and, after a few min., the iodine liberated is titrated with $Na_2S_2O_3$ as usual. E. U. Blam

CA

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Solubility of hydrazides of copper, zinc, nickel, and cobalt in sodium hydroxide and in ammonia. M. I. Arkhipov, A. B. Pakshver, and N. I. Podbornova (Ivanov Chem. Technol. Inst.). *Zhur. Prikład. Khim.* (J. Applied Chem.) 23, 650-6(1950); *cf. ibid.* 23, 181(1950).—Soly. was detd. at 20° after 24-hr. contact between the hydroxide and the soln. Selected data of equil. concns. of the hydroxide (g./l.) in terms of the concn. of NH_3 or NaOH (g./l.) are: in NH_3 46.7, 130.8-139.0, 213.0, $Zn(OH)_2$ 10.6, 19.3 (max.), 16.7; NH_3 36.4, 126.0, 193.0, $Ni(OH)_2$ 2.38, 9.0, 14.5; NH_3 43.9, 123.7, 204.0, $Cu(OH)_2$ 3.75, 11.9, 15.5; in NaOH 68.4, 202.0, 360.0, $Zn(OH)_2$ 8.0, 45.5, 80.4; NaOH 68.4, 202.0, 360.0, $Cu(OH)_2$ 0.25, 2.87, 10.4; at 15°, NaOH 56.4, 172.8, 240.0, $Cu(OH)_2$ 0.10, 0.80, 2.61; at 15°, NaOH 80.4, 169.2, 309.2, $Co(OH)_2$ 0.57, 4.00, 9.20. The order of decreasing soly. in NH_4OH is $Zn(OH)_2 > Cu(OH)_2 > Ni(OH)_2$; in NaOH, it is $Zn(OH)_2 > Co(OH)_2 > Cu(OH)_2 > Ni(OH)_2$. The stability of the solns. was tested by dilg. the satd. soln. with H_2O until beginning pptn. at 18-20°, allowing to rest 48 hrs. in the dark, and analyzing the supernatant soln. From the expt. data, the order of decreasing stability toward hydrolysis is, in solns. in NH_4OH, $Zn(OH)_2 > Cu(OH)_2 > Ni(OH)_2$, and in soln. in NaOH, $Zn(OH)_2 > Cu(OH)_2$. Solns. of the same hydroxide in NH_4OH are more stable than in NaOH. Whereas $Zn(OH)_2$ is more sol. in NaOH than in NH_4OH, the soly. of $Cu(OH)_2$ and of $Ni(OH)_2$ is greater in NH_4OH. With regard to soln. of cellulose in an NH_3 or NaOH soln. of a metal hydroxide, the obvious requirement is high soly. of the hydroxide and low stability of the complex soln. in contact with the OH groups of the cellulose. If the latter action is considered to run parallel to the hydrolysis by H_2O, the most suitable solns. are $Zn(OH)_2$ in NaOH or $Cu(OH)_2$ in NH_4OH; less active are solns. of $Ni(OH)_2$ in NH_4OH, and $Cu(OH)_2$ or $Co(OH)_2$ in NaOH. A soln. of $Zn(OH)_2$ in NH_4OH cannot be used for dissolving cellulose because of its stability. N. Thon

CA

2

The solubility of copper, zinc, nickel, and cobalt hydroxides in caustic alkali and ammonia. M. I. Arkhipur, A. N. Paknaver, and N. I. Podkuvnova (Ivanovo Ind. Chem. Inst.). *J. Applied Chem. U.S.S.R.* 23, 885-91 (1950)(Engl. translation).—See *C.A.* 44, 8740h.

R. M. S.

2A

General & Physical Chemistry

Differences of the reactivities of some polyhydroxy compounds in cuproammoniacal solution and their dependence on the ammonia concentration. M. I. Arkhipov and A. N. Rykov (Ivanovo Chem. Technol. Inst.). *Zhur. Prikład. Khim.* (J. Applied Chem.) 24, 102-12(1951).—Reactivities of both simple polyhydroxy compds. (Rochelle salt, sucrose, glycerol, mannitol, dulcitol, triethanolamine) and of higher carbohydrates (cellulose and its derivs.) are evaluated by their ability to increase the solv. of $Cu(OH)_2$ in aq. NH_3, by binding part of the Cu of the $[Cu(NH_3)_n](OH)_2$ base into a more stable sol. compd. The effect is characterized by the mol. ratio m of the Cu bound and the amt. of polyhydroxy compd. added, and by the ratio $r = Cu:(n.OH/2)$ of the no. of moles of Cu and the no. n of pairs of OH groups in the mol. Typical data, at 20°, NH_3 = const. = 200 g./l. of the concn. c of Cu (moles/l.) and of the increase Δ (moles Cu/l.) of the solv., and of m and r, are: Rochelle salt 0.030 moles/l., c = 0.1772, Δ = 0.0340, m = 1.7, r = 1.700; dulcitol 0.020, 0.1801, 0.0420, 2.15, 0.717; mannitol 0.020, 0.1820, 0.0394, 1.97, 0.657; glycerol 0.020, 0.1682, 0.0250, 1.25, 0.833; triethanolamine 0.020, 0.1682, 0.0250, 1.25, 0.833; cellulose 0.001, 0.2166, 0.0008, 0.77, 0.530; hydroxycellulose 0.005, 0.2291, 0.0028, 0.87, 0.580. With the NH_3 concn. increasing (up to 200 g./l.), c increases in all cases; the curves of c with addns. lie markedly above the curve without addn. With hydrocellulose, an increase of the solv. of Cu begins only above $[NH_3]$ = 10.8 g./l.; with cellulose, only an insignificant Δ is found at $[NH_3]$ = 3 moles/l., whereas both hydroxy and hydrocellulose give a marked increase of c at that NH_3 concn. The curve of the ratio m, as a function of $[NH_3]$, lies highest in the absence of addns., and has a min. at $[NH_3] \sim 5$ mole/l. With sucrose, m increases linearly with $[NH_3]$, and its line lies considerably below the curve corresponding to absence of addn. The Rochelle-salt curve, with an initial rectilinear portion, is the lowest. The curves of the celluloses pass through a min., at the same position as the curve without addn. The ratio r increases in all cases with $[NH_3]$, particularly in the lower-$[NH_3]$ portions; the Rochelle-salt curve lies highest. In general, increase of $[NH_3]$ increases the reactivity of the polyhydroxy compd. relative to $Cu(OH)_2$. The rotatory power $[\alpha]$ of cuproammoniacal solns. is also affected by the $[NH_3]$ concn. of the soln. With a 0.1 *M* soln. of hydrocellulose, no optical activity is found below $[NH_3]$ = 1 *M*; from that point on, $[\alpha]$ increases rapidly with $[NH_3]$ up to $[NH_3]$ = 5 moles/l., and then further increase becomes much slower. In solns. of Rochelle salt and of sucrose, $[\alpha]$ is increased even by low concns. of NH_3, and then increases further with $[NH_3]$, more rapidly in sucrose than in Rochelle salt. Proof that an increase of $[NH_3]$ in the soln. produces an increased degree of ammination, i.e. an increase of the no. of NH_3 mols. coördinated in the cuproammoniacal complex of the polyhydroxy compd., is provided by spectrophotometric detns. of the mol. absorption coeff. E of the solns. as a function of $[NH_3]$. In 541.6 mμ, E falls regularly with increasing $[NH_3]$, the order of the curves being (from top to bottom): without addn., with hydrocellulose (0.1 *M* with respect to the unit formula),

C. A.

23

Potentiometric study of cuprammonium solutions of cellulose. M. L. Arkhipov and V. P. Kharitonova (Ivanovsk Chem. Tech. Inst.). *Zhur. Prikład. Khim.* (J. Applied Chem.) 24, 733-41(1951).—Potentiometric (glass and H electrode) detn. of pH in cuprammonium solns. with 0.27–0.81 g./l. Cu show higher OH^- concn. in cuprammonium solns. than in the ammonia base. Addn. of a common ion represses the OH^- concn.; pH values decline on addn. of dulcitol, sucrose, or cellulose. During titration of cuprammonium soln. there occurs a break in the titration curve at the neutralization of about 50% of Cu, showing a two-fold dissocn. of the cuprammonium complex. The depression of pH by addn. of polyhydroxy compds. is greatest with low Cu concns., explainable by formation of a $Cu(NH_3)_4$ salt bridge across the adjacent HO groups of the added compds. or by transfer of 2 OH groups to these OH groups from the complex $[Cu(NH_3)_4](OH)_2$.

G. M. Kosolapoff

ARKHIPOV, Mikhail Ivanovich

Academic degree of doctor of Technical Sciences, based on his defense, 21 December 1954, in the Council of the Leningrad Order of Labor Red Banner Technological Inst imeni Lensovet of his dissertation entitled: "Research in the Field of Copper-Ammoniate Solutions of Cellulose."

Academic degree and/or title: Doctor of Sciences

SO: Decisions of VAK, List no. 25, 10 Dec 55, Byulleten' MVO SSSR, Uncl. JPRS/NY 548

ARKHIPOV, M.I.

USSR/Physical Chemistry - Electrochemistry, B-12

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 511

Author: Arkhipov, M. I., and Kharitonova, V. P.

Institution: Ivanovsk Institute for Chemical Technology

Title: Dependence of the Oxidation-Reduction Potential of Copper on the Ammonia Concentration in Copper-Ammonia Solutions

Original Periodical: Tr. Ivanovs. khim.-tekhnol. in-ta, 1956, Vol 5, 139-143

Abstract: The oxidation-reduction potential E of an ammonia solution of $Cu(OH)_2$, measured with a Pt-electrode, becomes more positive as the NH_3 concentration is increased. An analogous effect is observed when metallic Cu is added to the solution. The addition of NH_4ClO_4 produces a lowering of E.

Card 1/1

Arkhipov, M. I.

USSR/Chemical Technology. Chemical Products and Their Application--Wood chemistry products. Cellulose and its manufacture. Paper. I-25

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 10027

Author : Arkhipov, M. I. and Spirin, V. A.
Inst : Ivanovsk Chemical Engineering Institute
Title : Investigations in the Field of Cuprammonium Cellulose Solution. Effect of the Composition of the Reagent on the Changes in the Structural Viscosity of a 1% Cellulose Solution. Arkhipov, M. I. and Bol'shakov, A. G.: Effect of Agitation Time and Rate on the Variation in the Structural Viscosity of a 1% Cellulose Solution.

Orig Pub: Tr. Ivanovsk. khim.-tekhnol. in-ta, 1956, No 5, 144-148; 149-153

Abstract: The effect of the concentration of Cu and NH_3 in the cuprammonium solution and of the type of

Card 1/3

USSR/Chemical Technology. Chemical Products and Their Application--Wood chemistry products. Cellulose and its manufacture. Paper. I-25

Abs Jour: Ref Zhur-Khimiya, No 3, 1957, 10027

Abstract: agitation on the changes in the structural viscosity of a 1% cellulose (I) cuprammonium solution has been investigated. It has been concluded that the transition of I from a swollen gel to the completely dispersed state proceeds gradually, the transition being the slower the lower the concentration of Cu and NH_3 in the solution. Increasing the concentration of the latter components leads to a reduction in structure formation in a 1% solution; however, structure formation was observed to take place in all 1% solutions investigated, the structure persisting even at relatively high pressures. When the agitation time and rate are increased, the number of macromolecular copper complexes of I and the strength of the bond between the separate macromolecular

Card 2/3

5(1,3)

AUTHOR: Arkhipov, M. I.

SOV/153-2-1-19/25

TITLE: On the Problem of the Solubilitiy of Various Copper Compounds in Aqueous Ammonia Solution (K voprosu o rastvorimosti razlichnykh soyedineniy medi v vodnom rastvore ammiaka)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 1, pp 102-108 (USSR)

ABSTRACT: The solution of the copper salts $Cu(OH)_2$ CuO and of the basic copper salts in aqueous ammonia solution as well as the properties of the resultant compounds has not yet been fully explained. Primarily the disagreement of data on the solubility of $Cu(OH)_2$ (Refs 3-5) could not be explained. In this investigation the author attempted to generalize his own experimental data as well as those of other scientists. Further, he dealt with the determination of the fundamental laws underlying the dissolution of copper compounds in various media. CuO and $Cu(OH)_2$ as well as the basic sulphuric acid salt and copper sulphate are known to be differently soluble in the same solvent. Unlike the other salts mentioned, copper sulphate is highly soluble in water. The solubility of these salts depends

always on the capability of entering interaction with any component of the aqueous solution and forming a more or less stable complex. This capability depends on the chemical nature of the reacting substances, that is to say, it is mostly determined by the chemical process. The compounds of the copper ion with anions of different chemical nature and anions of different size possess different degrees of solubility and different capability of forming complexes. The crystalline structure of the resultant compounds affects considerably the process of dissolution. Consequently, CuO and $Cu(OH)_2$ from the same complex compound $\left[Cu(NH_3)_m\right](OH)_2$ when dissolved in an aqueous ammonia solution of equal concentration. However, the concentration of the latter compound with $Cu(OH)_2$ exceeds that of the compound with CuO by several times (Table 1). Table 1 indicates that the equilibrium state in the case of the system $Cu(OH)_2$ is practically attained within three hours, whereas it takes 75 days in the case of CuO. In the first case the copper concentration in the solution is higher by 2.5 times though

the ammonia concentration is only 1/3 as high. Contrary to the dissolution of CuO which is limited by the strength of the crystal lattice, the concentration of Cu in the equilibrium state (solubility) is, in the dissolution of $Cu(OH)_2$, determined by the chemical stability of the complex. In order to increase the concentration of the copper-ammonium base, temperature must be lowered as much as possible. This favors also the reaction of the afore-mentioned base with cellulose (Table 2). Further, the author studied the effect of the addition of salts on the dissolution of $Cu(OH)_2$ (Table 3) which indicates that the Cu concentration is rapidly increased by ammonium salts and salts of alkaline metals. From the practical point of view the Cu concentration in the dissolution of $Cu(OH)_2$ can be lower or higher than the equilibrium concentration for two reasons: (1) if the state of equilibrium in the system is not attained; (2) due to by-processes: (a) partial transition of $Cu(OH)_2$ to the colloidal state; (b) formation of HNO_2 owing to oxidation of NH_3 by atmospheric oxygen; (c) absorption of acid vapors and

gases. In all these cases the Cu concentration is higher than that to be expected with true state of equilibrium. All these causes lead to great differences in the $Cu(OH)_2$ solubility in an aqueous ammonia solution. Thus the impression arises that the afore-mentioned solubility is an undefined quantity. However, constant values are obtained if all these causes are taken into account or eliminated. There are 4 tables and 17 references, 9 of which are Soviet.

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut; Kafedra khimicheskoy tekhnologii iskusstvennogo volokna (Ivanovo Institute of Chemical Technology, Chair of the Technology of Synthetic Fibers

SUBMITTED: September 30, 1957

OPOL'NOVA, G.V.; ARKHIPOV, N.I.

Phenolysis of hydrolytic lignin in an acid medium. Gidrolis i lesokhim. prom. 12 no.5:9-10 '59. (MIRA 12:10)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Lignin) (Phenols)

15.7110

S/081/62/000/012/052/063
B158/B101

AUTHORS: Mogilevich, M. M., Arkhipov, M. I.

TITLE: Examination of the film-forming capacity of mixed polyesters of the acrylic series in the presence of cobalt salts.

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 12, 1962, 603, 12P206 (Lakokrasochn. materialy i ikh primeneniye, no. 6, 1960, 12-16)

TEXT: The film-forming capacity of hexamethacrylate-(bis-pentaerythrite)-adi-pinate (I) and hexaacrylate-(bis-pentaerythrite)-adicinate (II) in the presence of Co salts was examined. I and II were produced by the well-known "condensation telomerization" method, consisting in regulation of the chain growth during polyesterification of dibasic acids with polyatomic alcohols by introducing monofunctional compound additives (in the case in question methacrylic or acrylic acid). The physico-chemical properties are given for the I and II produced; they are basically polyesters with a moderate degree of polycondensation, equal to 1. The film-forming capacity of I and II was examined by

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determining their degree of conversion to an insoluble polymer during the hardening process. For this, a 60% toluene solution of I or II was applied to glass plates and kept for a fixed time at a given temperature, and the film then extracted with acetone. It is established that I and II are capable of forming films at 18-100°C in the presence of Co linoleate (3.57% metallic Co) or in the presence of Co naphthenate with a forced addition of linseed oil; with increase in the temperature, the rate of polymerization rises abruptly and conversion of I and II to an insoluble polymer takes place more completely; polymerization of I and II does not occur in the presence of Co naphthenate without linseed oil added; the film-forming process is retarded with increase in the thickness of the I and II layer; atmospheric oxygen can act as inhibitor or initiator depending on the conditions of film formation of I and II. During the hardening process of I films, oxygen is taken into their composition at 1.2-1.4 atoms per molecule of I. [Abstracter's note: Complete translation.]

/13

ARKHIPOV, M.I.

Thermodynamics of the reaction of polyhydroxy compounds with ammoniated copper hydroxide. Part 1: Reaction of ethylene glycol and α-methylglucoside with ammoniated copper hydroxide in solution. Izv.vys.ucheb.zav.; khim.i khim.tekh. 3 no.2:352-358 '60. (MIRA 14:6)

1. Ivanovskiy khimiko-tekhnologicheskiy institut kafedra khimicheskoy tekhnologii lakov, krasok i nemetallicheskikh pokrytiy.

(Copper compounds) (Ethylene glycol)
(Glycosides)

ARKHIPOV, M.I.

More accurate formula for determining the molecular weight of cellulose by viscometry. Izv.vys.ucheb.zav.; khim.i khim.tekh. 3 no.6:1109-1110 '60. (MIRA 14:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra tekhnologii lakov, krasok i nemetallicheskikh pokrytiy.
(Cellulose)

ARKHIPOV, M.I.

Thermodynamics of the reactions of polyhydroxyl compounds with a cuprammonium base. Part 3: Determination of the thermal effects of reactions between ethylene glycol and methylglucoside with a cuprammonium base with the aid calorimeter. Izv.vys.ucheb.zav.; khim.i khim.tekh. 3 no.6:1082-1085 '60. (MIRA 14:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra tekhnologii lakov, krasok i nemetallicheskikh pokrytiy.
(Ethylene glycol) (Glucoside)

5.4700
5.3200

S/153/60/003/02/27/034
B011/B006

AUTHOR: Arkhipov, M. I.

TITLE: Thermodynamics of the Reaction of Polyhydroxyl Compounds With the Copper Ammonium Base. I. Interaction of Ethylene Glycol and α-Methyl Glucoside With the Copper Ammonium Base in the Solution

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 2, pp. 352-358

TEXT: Polyhydroxyl compounds (PHC), e.g. cellulose, are soluble in copper ammonium reagent. Owing to considerable experimental difficulties, the thermodynamics of such reactions has not been investigated. In the present paper, the author gives the values obtained by him for the equilibrium constants and other thermodynamic characteristics of the reaction mentioned in the subtitle. For this investigation, he applied the conductometric- and solubility methods. In the former case, the author used an apparatus shown in Fig. 1. The specific electrical conductivity (χ) of the solutions

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Thermodynamics of the Reaction of Polyhydroxyl Compounds With the Copper Ammonium Base. I. Interaction of Ethylene Glycol and α-Methyl Glucoside With the Copper Ammonium Base in the Solution

S/153/60/003/02/27/034
B011/B006

was measured by the compensating method. The author developed a graphic calculation method of determining the concentration of the compound formed from the copper ammonium reagent and PHC (Fig. 2). It is based on the fact that at low concentrations (up to 0.025 moles/l), the conductivity is a linear function of the copper concentration. Since the initial copper concentration is known, and its equilibrium concentration is determined graphically, the decrease in the copper concentration ($-\Delta Cu$) in the course of the reaction can be determined from the difference between them. The chemical equilibrium constant is calculated with the aid of equation (2). The values for these constants and other parameters found by conductometric measurements are given in Table 1. The equilibrium constant is independent of the ammonia concentration in the solution. The latter does therefore not influence the reactivity of the copper ammonium base in its reaction with PHC. The reaction is exothermic since the reaction rate decreases with a rise in temperature. Table 1 also gives

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S/153/60/003/02/27/034
B011/B006

Thermodynamics of the Reaction of Polyhydroxyl Compounds With the Copper Ammonium Base. I. Interaction of Ethylene Glycol and α-Methyl Glucoside With the Copper Ammonium Base in the Solution

the values calculated for the heats of reaction q, standard thermodynamic potentials (ΔZ^o) for the reaction, and values for the increase in the entropy (ΔS^o) of the system (equation (3)). By comparing the data obtained by the solubility method (Table 2) with the above data, it is seen that the corresponding values of the equilibrium constant are in good agreement. K_p of α-methyl glucoside is about 17 times higher than K_p of ethylene glycol. The former compound is therefore more reactive and has a higher ΔZ^o. Only two of the four hydroxyl groups in α-methyl glucoside enter into reaction, i.e. only those at adjacent carbon atoms. There are 2 figures, 3 tables, and 8 references, 5 of which are Soviet.

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut; Kafedra khimicheskoy tekhnologii lakov, krasok i nemetallicheskikh pokrytiy (Ivanovo Institute of Chemical Technology, Chair of Chemical Technology of Paints, Varnishes, and Nonmetallic Coatings)

Card 3/4

Thermodynamics of the Reaction of Polyhydroxyl Compounds With the Copper Ammonium Base. I. Interaction of Ethylene Glycol and α-Methyl Glucoside With the Copper Ammonium Base in the Solution

S/153/60/003/02/27/034
B011/B006

SUBMITTED: September 23, 1958

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S/153/60/003/004/032/040/XX
B020/B054

AUTHOR: Arkhipov, M. I.

TITLE: Thermodynamics of the Reactions of Polyhydroxy Compounds With Copper Ammonia Base. II. Interaction of Cellulose With Copper Ammonia Base

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1960, Vol. 3, No. 4, pp. 725 - 730

TEXT: The author gives the results of the thermodynamic investigation of the reaction of cellulose with copper ammonia bases by the polarimetric, conductometric, and solubility methods. In the first method, the rotational angle (α^o) was measured by a polarimeter of the Lippich system in a tube with jacket for tempering. The equilibrium constant K_{eq} of the reaction was calculated from the equation $K_{eq} = (k.\Delta\alpha^o)/[(c_1 - k.\Delta\alpha^o)(c_2 - k.\Delta\alpha^o)]$ (2), where k is the proportionality factor (equal to the concentration of the optically active compound

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at which the rotational capacity under given conditions is unity), $\Delta\alpha^{\circ}$ the change of the rotational angle of the solution as compared with that of the solvent, c_1 the total concentration of Cu in the solution in moles/l, and c_2 the total concentration of cellulose (in moles/l), the molecular weight of the glucoside radical being taken as one mole. Under the given conditions, k = 4.8, and the mean value of K_{eq} at 25°C, calculated from 15 test series, was $3.7 \cdot 10^{-2}$. The mean value of the change of the thermodynamic potential under normal conditions, calculated from the isobaric equation, was $\Delta Z^{\circ} = -2.1$ kcal/mole, the mean value of the change in entropy of the system due to the reaction $\Delta S^{\circ} = -7.9$ e.e. (entropy units), and the heat effect of the reaction - 4.5 kcal/mole. Disadvantages of the solubility method are that work is impossible at 25°C and at ammonia concentrations above 3 moles/l. Experiments were conducted at 0°C, and at a ratio $Cu(OH)_2$: volume of the NH_3 solution = 6/100 g/ml. Results are given in Table 1. K_{eq} at 0°C show satisfactory

agreement with each other, the maximum error being ± 10%. The equilibrium constants at 25°C, calculated from the heat effect of the reaction (determined by the polarimetric method), are in agreement with each other and with the equilibrium constants determined by the polarimetric method. In the conductometric method, it proved to be necessary to use a correction for the viscosity of the solution. The corrected electrical conductivity of the solution is determined from the equation $\varkappa_0 = \varkappa.\eta_{rel}^{m}$ (4), where $\varkappa_0$ is the corrected electrical conductivity, $\varkappa$ the experimentally found electrical conductivity of the copper ammonia solution of cellulose, η_{rel} the relative viscosity of the solution, and m a constant calculated from K_{eq} and being equal to 0.3-0.4 in most of the cases. Table 2 gives the measured values of $\varkappa$, the calculated K_{eq} for solutions of various copper and cellulose concentrations with and without correction for viscosity, and the other thermodynamic quantities calculated. The arithmetical mean of q for all test series was

Thermodynamics of the Reactions of Poly- hydroxy Compounds With Copper Ammonia Base. II. Interaction of Cellulose With Copper Ammonia Base

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6.2 kcal/mole. Table 3 gives the results of the thermodynamic investigations of the reaction of cellulose with copper ammonia base in dilute solutions carried out by various methods. It was found that all methods mentioned yielded agreeing results for the thermodynamic quantities of the given reactions. There are 3 tables and 12 references: 10 Soviet and 2 German.

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra tekhnologii lakov, krasok i nemetallicheskikh pokrytiy (Ivanovo Institute of Chemical Technology, Department for the Technology of Varnishes, Dyes, and Nonmetallic Coats)

SUBMITTED: September 23, 1958

Card 4/4

ARKHIPOV, M.I.; VALGIN, A.D.

Spectrophotometric examination of alkylphenol-formaldehyde resins. Lakokras.mat. i ikh prim. no.2:59-62 '61. (MIRA 14:4)

1. Laboratoriya kafedry lakov i krasok Ivanovskogo khimiko-tekhnologicheskogo instituta.
(Phenol condensation products--Spectra)

MOGILEVICH, M.M.; ARKHIPOV, M.I.

Film-forming capacity of mixed esters of the acrylic series in the presence of oxidation-reduction systems. Lakokras mat. i ikh prim. no.3:3-8 '61 (MIRA 14:6)

(Acrylic acid)
(Films (Chemistry))

BAGAZHKOV, S.G.; ARKHIPOV, M.I.

Synthesis of dodecylphenolformaldehyde tar and its properties.
Lakokras. mat. i ikh prim. no.5:16-19 '61. (MIRA 15:3)
(Phenol condensation products) (Protective coatings)

40967

15.8110

S/081/62/000/016/034/043
B171/B186

AUTHORS: Mogilevich, M. M., Arkhipov, M. I.

TITLE: Research on the film-forming properties of mixed polyesters in the acrylic series

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 16, 1962, 543, abstract 16P223 (Lakokrasochn. materialy i ikh primeneniye, no. 6, 1961, 26 - 30)

TEXT: In addition to the hexamethacrylate - (bis-pentaerythrol)-adipate (MPA) and hexaacrylate - (bis-pentaerythrol)-adipate, previously obtained (see RZhKhim, 1962, 12P206), the two following new polyesteracrylates (PEA) have been synthesized: tetramethacrylate- (bistrimethylolethane)-adipate (MTA) and dimethacrylate-(bis-ethyleneglycol)-adipate (MEA). It has been established that the film-forming property is determined by the molecular functionality, the viscosity and the ramification of oligomer PEA as well as by the conditions of reaction. The PEA investigated as regards their film-forming properties can be classified as follows: MPA>MTA>MEA. It has been shown that the hardness and the elasticity of films is conditioned by

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their content of three-dimensional polymers and by the number of reacted double bonds per unit volume. In the sequence MPA, MTA, MEA, the film hardness decreases but the elasticity increases. Both the hardness and the elasticity of films can be modified at will by combining MEA with MPA and MTA. 12 references. [Abstracter's note: Complete translation.]

ARKHIPOV, M.I.

Thermodynamics of the reactions of polyhydroxy compounds with a copper ammonia base. Part 4: Determination of the thermal effect in the interaction between cellulose and a copper ammonia base with the aid of a calorimeter. Izv.vys.ucheb.zav.; khim.i khim.tekh. 4 no.1:123-127 '61. (MIRA 14:6)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra tekhnologii lakov, krasok i nemetallicheskikh pokrytiy.
(Cellulose) (Copper compounds)
(Chemical reaction, Heat of)

S/081/62/000/002/104/107
B110/B101

AUTHORS: Mogilevich, M. M., Arkhipov, M. I.

TITLE: Investigation of film-forming properties of mixed polyesters of the acryl series in the presence of redox systems

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 604, abstract 2P281 (Lakokrasochn. materialy i ikh primeneniye, no. 3, 1961, 3 - 8)

TEXT: The hardening rate in a 40 μ thick layer was investigated in air at 65, 80, and 100°C for two polyester acrylates (I): hexamethacrylate- and hexaacrylate-bis-(pentaerythrite)-adipinate in the presence of various redox systems; of the initiator: peroxides or hydroperoxides (II) and Co-naphthenate (III) or Co-linoleate (IV). The process was characterized by a high yield of unsoluble polymer. The investigated II in conjunction with III with respect to I without inhibitor can be arranged in the following decreasing order: 1,1'-bis-hydroperoxy dicyclohexyl peroxide > diisopropyl benzene hydroperoxide (p-tert-butyl isopropyl benzene hydroperoxide, isopropyl benzene hydroperoxide) > benzoyl peroxide (BP). The presence of 0.16% hydroquinone in I changes the activity of II; in this case, BP takes

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the second place in the given order. IV is found to be much more efficient than III. This is explained by the fact that IV contains residues of the fatty acids of linseed oil which may form unstable hydroperoxides and additional free radicals with atmospheric oxygen. Thus, the same efficiency was obtained for both systems: PB-IV and PB-III with linseed oil additions [Abstracter's note: Complete translation.]

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MOGILEVICH, M.M.; ARKHIPOV, M.I.

Determining the unsaturation of mixed polyesters of the acrylic series. Lakokras.mat.i ikh prim. no.1:57-60 '62. (MIRA 15:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Acrylic acid) (Esters)

ARKHIPOV, M.I.

Studying phenol resins. Report No.2: Conditions for the synthesis of amyl phenol-formaldehyde resins and their properties. Lakokras. mat.i ikh prim. no.2:17-21 '62. (MIRA 15:5)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Resins, Synthetic)

MOGILEVICH, M.M.; ARKHIPOV, M.I.

Investigating film-forming properties of mixed polyesters of the acrylic series. Lakokras. mat. i ikh prim. no.6:26-30 '61. (MIRA 15:3)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Films (Chemistry)) (Lacquer and lacquering)

ARKHIPOV, M.I.; LARIONOV, A.I.

Amino-phenol resins; literary review. Lakokras.mat. i iks prim. no.2: 78-83 '63. (MIRA 16:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.
(Resins, Synthetic)

BAGAZHKOV, S.G. ; ARKHIPOV, M.I.

Kinetics of the reaction of n-tert-butylphenol with formaldehyde in the alkali medium. Lakokras.mat. i ikh prim. no.4:14-16 '62.
(MIRA 16:11)

ARKHIPOV, M.I.; MYASNYANKINA, T.I.

Effect of phenols and phenol, butyl formaldehyde resins on the formation of the oil-lacquer film and its properties. Lakokras.mat. i ikh prim. no.2:11-13 '64. (MIRA 17:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut.

AUTHOR: Mogilevich, M. M.; Arkhipov, M. I.

TITLE: The use of polyester acrylates as [illegible]

SOURCE: Lakokrasochnyye materialy [illegible]

TOPIC TAGS: polyester acrylate, alkyde resin, hexamethacrylate adipate, tetramethacrylate phthalate, water resistance, hardness [illegible] stability [illegible] lacquer [illegible] drying, natural drying, resin additive

ABSTRACT: The possibility and effectiveness of using hexamethacrylate (bis-pentaerythritel) adipate (MPA) and tetramethacrylate (bis-glycerol) phthalate (TMGP-11) as additives for alkyde resins were studied. Lacquers obtained by hot and natural drying from alkyde resins with and without additives were [illegible] and iron. The addition of [illegible] hardness and corrosion stability of the films made from their lacquers [illegible] water resistance [illegible] naturally dried lacquer films [illegible]. The hardness of [illegible] addition of polyester acrylates [illegible] consequently the film [illegible]

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L 30000-65
ACCESSION NR: AP4047674

acrylate TMGP-11 is equal in efficiency to MPA. Comparison shows that [illegible] polyester acrylates [illegible]

[illegible] have a greater advantage when dried under natural conditions. By the addition of [illegible] ester acrylate to alkyde resins [illegible]

ASSOCIATION: none

SUBMITTED: 06 ENCL: [illegible] SUB CODE: [illegible]

NO REF SOV: 007 OTHER: 000

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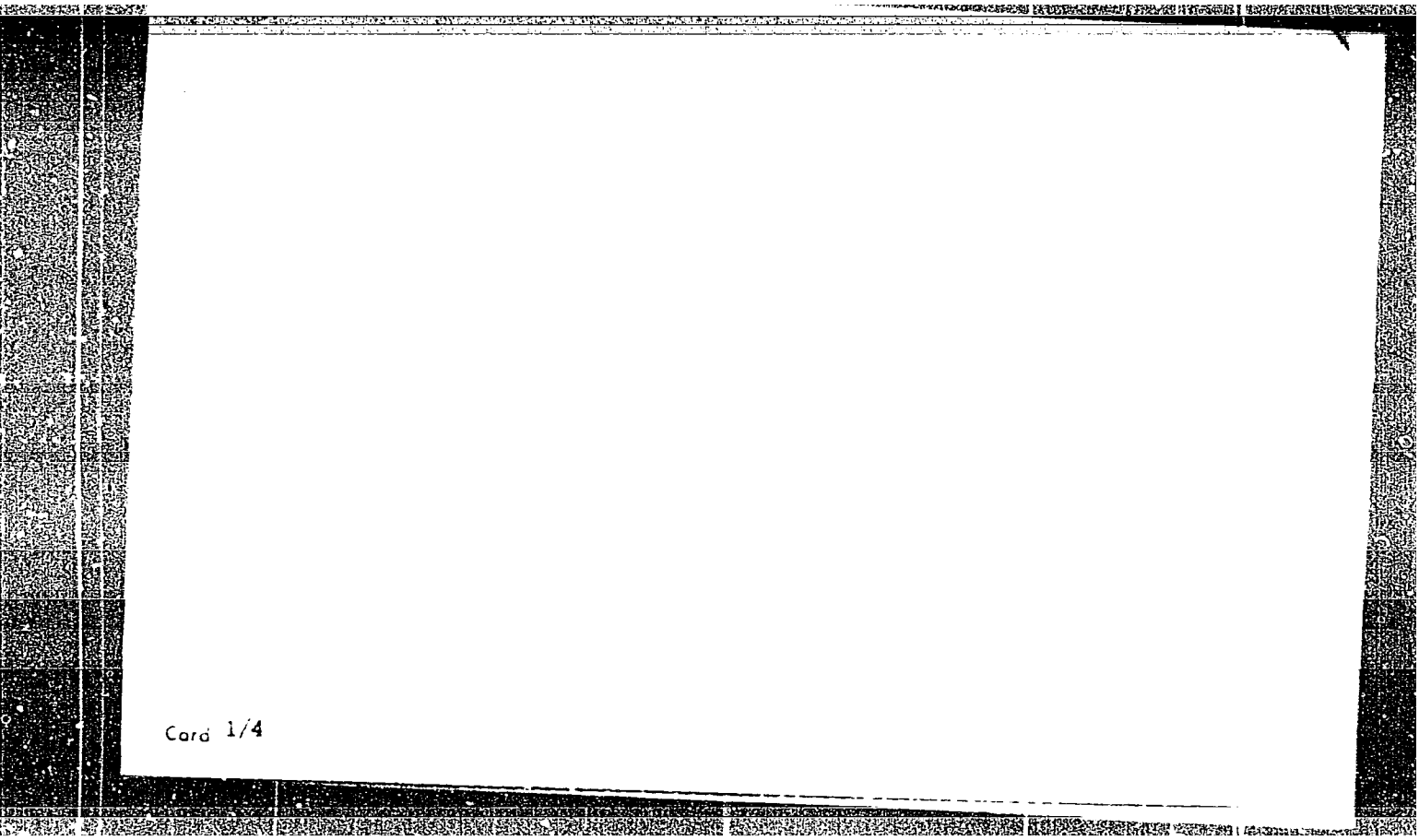

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ACCESSION NR: AP5007139

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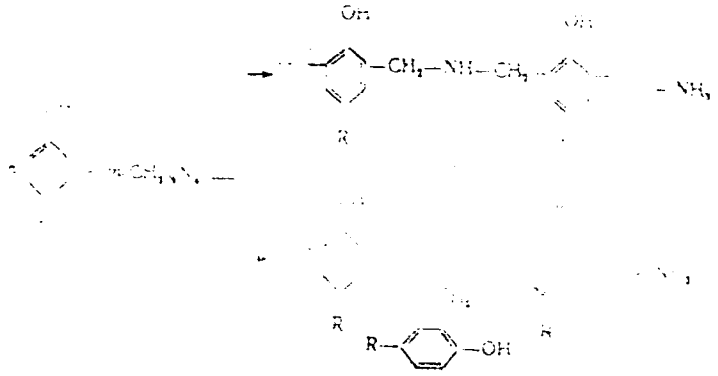

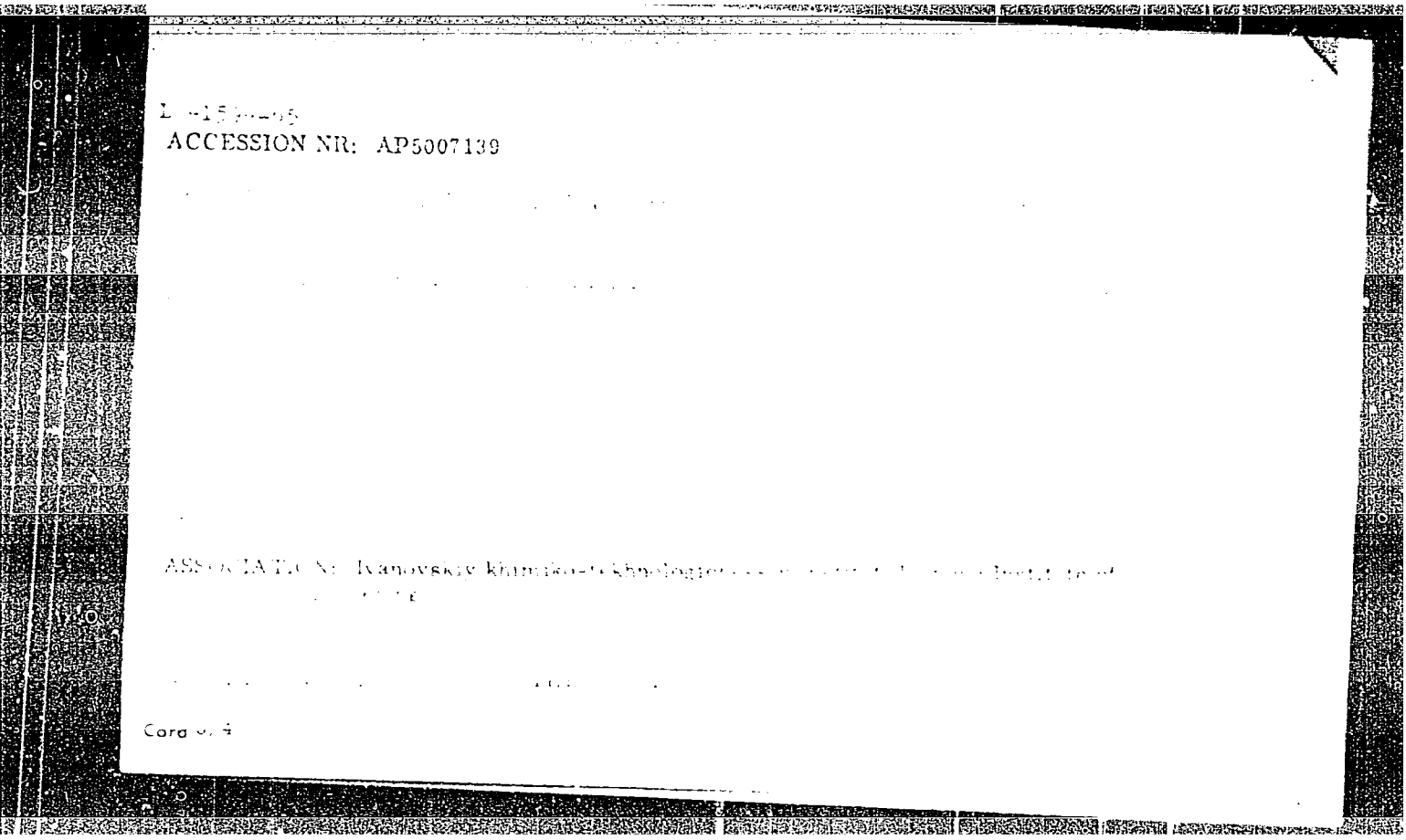

L [illegible]
ACCESSION NR: AP5007139

ASSOCIATION: Ivanovskiy khimiko-tekhnologicheskiy [illegible]

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SOROKIN, Mikhail Fedorovich; LYALYUSHKO, Kapitolina Alekseyevna; YUKHNOVSKIY, G.L., prof., doktor khim. nauk, retsenzent; ARKHIPOV, M.I., doktor tekhn. nauk, prof., retsenzent; ALAVERDOV, Ya.G., red.

[Practical laboratory work on synthetic polymers for lacquers] Praktikum po sinteticheskim polimeram dlia lakov. Moskva, Vysshaia shkola, 1965. 271 p. (MIRA 18:7)

1. Zaveduyushchiy kafedroy Khar'kovskogo Politekhnicheskogo instituta im. V.I.Lenina (for Yukhnovskiy).

GADZHIBALAYEV, A.A.; ARKHIPOV, M.I.

Arylalkylation of phenol by styrene in the presence of ortho-phosphoric acid. Izv. vys. ucheb. zav.; khim. i khim. tekh. 8 no.3:469-475 '65. (MIRA 18:10)

1. Kafedra tekhnologii lakov, krasok i nemetallicheskikh pokrytiy.

ARKHIPOV, M.M. (Khotin, Chernovitskoy obl., ul. Bogdana Khmel'nitskogo, d. 15)

Prolapse of an invaginated sigmoid colon. Nov. khir. arkh. no.2: 120-121 Mr-Ap '59. (MIRA 12:7)

1. Khirurgicheskoye otdeleniye Khotinskoy rayonnoy bol'nitsy Chernovitskoy obl.
(INTESTINES--INTUSSUSCEPTION)

ARKHIPOV, M. (Engr-Lt Col, Candidate of Technical Sciences)

Arkhipov, M. (Engr-Lt Col, Candidate of Technical Sciences) - Author of article, "Atomic Energy: The physics of the Nuclear Explosion, "which explains the power of atomic explosions, the materials used in such explosions, how an explosion is effected and the results of the blast. The article mentions the 1940 discovery of the structure of uranium by Soviet scientists, and depicts how a bomb might be exploded using conventional explosive materials to drive two half-spheres of subcritical material together. (Krasnaya Zvezda, 20 March 1954)

Author of article, "Atomic Energy: Thermonuclear Reaction With Hydrogen," which likens the explosion of a hydrogen bomb to the explosion caused by the great meteorite which fell in Siberia in 1908. The author states that the hydrogen bomb releases about 8-10 times more energy than the atom bomb, using the same amount of nuclear fuel, and that hydrogen shells can be used inaerial bombs, rockets, and torpedoes. (Krasnaya Zvezda 26 Mar 54)

SO: SUM 175, 6 August 1954

ARKHIPOV, M. (Lt. Col., Cand., Tech. Ser. Engr.)

"Thermonuclear Reaction With Hydrogen," Red Star, Mar 26, 54.

Translation D-141887, 17 Dec 54

ARKHIPOV, M., (Engr-Lt Col, Candidate of Technical Sciences)

Coauthor with Maj Gen G. POKROVSKIY* of article, "The Physics of the Action of Nuclear Forces (In the Atmosphere and in the Sea)," telling of the effects of nuclear explosions, and of light and shock waves, produced by air and underwater bursts of nuclear bombs. [Translated in full in Joint Press Reading Service, No 156, 5 June 1954.] (Krasnaya Zvezda, Moscow, 4 Jun 54)

SO: SUM No. 224, 28 Sep 1954

TRANSLATION D-141887, 17 Dec 54

ARKHIPOV, M., Engr-Lt Col

Author of article, "Air Shock Wave and Light Radiation During an Atomic Explosion." Sovetskaya Armiya, Group of Soviet Forces, Germany, 14 Aug 54, Doblest', (24th Air Army), 17 Aug 54

Author of article, "Problems of Utilising Atomic Energy," subtitled "Nuclear Reactors," concerning the construction of nuclear piles or reactors, and the methods of controlling nuclear reaction by means of a light substance (water, paraffin, carbon, etc.). The author explained how "enriched piles" are made, and how plutonium is derived from enriched nuclear piles. (Article translated in full Joint Press Reading Service, No 257, 14 September 1954.) Krasnaya Zvezda, Moscow, 7 Sep 54

SO: SUM 291, 2 Dec 1954

ARKHIPOV, M. (Lt. Col., Engr., Bachelor of Tech. Scis.)

"Problems of the Utilization of Atomic Energy," Red Star, September 7, 1954.

Translation D-141887, 17 Dec 54

ARKHIPOV, M.

Subject : USSR/Aeronautics AID P - 420

Card 1/1 Pub. 135, 16/17

Author : Arkhipov, M., Lt. Col. Eng., Kand. of Tech. Sci.

Title : Light radiation of an atomic explosion

Periodical : Vest. vozd. flota, 9, 87-94, S 1954

Abstract : This article is an answer to a reader's request for the explanation of light radiation during an atomic explosion and of its striking effects. The author explains the phenomena and gives the basic formulae of energy. Graphs and tables.

Institution : None

Submitted : No date

ARKHIPOV, M.

Subject : USSR/Aeronautics AID P - 1083

Card 1/1 Pub. 58 - 13/19

Author : Arkhipov, M., Kand. of Tech. Sci.

Title : Air shock wave and light radiation in an atomic explosion

Periodical : Kryl. rod., 12, 19-20, D 1954

Abstract : Popular explanation of the formation of the shock waves and comparison with other explosions. General information on light radiation. Diagram.

Institution : None

Submitted : No date

ARKHIPOV, M. P. Eng. Lt. Col. Cand. Tech. Sci.

"The Atomic Weapon," Komsomol'skaya Pravda, Moscow, No.142, p. 3, 17 Jun 1955

Translation D 416337

ARKHIPOV, M. Eng. Lt. Col.

"Soviet Nuclear Reactors," Krasnaya Zvezda, No.229, p. 3, 27 Sep 55

Summary of article D 418806

ARKHIPOV, M.

"Soviet Nuclear Reactors," a chapter from the book Problems in the Utilization of Atomic Energy, the second revised edition of a collection of articles, published in 1956, Moscow, USSR

ARKHIPOV, M. P.

"The Working Principles and Structureof Nuclear Reactors," a chapter from the book Problems in the Utilization of Atomic Energy, the second revised edition of a collection of articles, published in 1956, Moscow, USSR

ARKHIPOV, M. P.

Osnovy Ustroystva Atomnogo Oruzhiya i Protivoatomnaya Zashchita (Bases of the Structure of Atomic Weapons and Anti-atomic Protection), by M. P. Arkhipov, under the editorship of G. I. Pokrovskiy, Moscow, Dosaaf, 1956, 87 pp, with illustrations, 250,000 copies (from standard USSR library card of the State Library of the USSR imeni V. I. Lenin, No 358.5

The book gives a brief explanation of the physical bases of atomic weapons and the injurious action of air, ground, underground and underwater atomic explosions, and describes means and methods of protection from atomic weapons.

Sum 1239

ARKHIPOV, M. P.

Svetovoye Izlucheniye Atomnogo Vzryva (Light Radiation From an Atomic Explosion), by Engineer-Colonel Mikhail Pavlovich Arkhipov, Candidate of Technical Sciences, Moscow, Voyennoye Izdatel'stvo, Ministry of Defense USSR, 1956, 211 pp

This book covers the following subjects: characteristics and injurious effect of an atomic explosion, the nature of light, temperature sources of light and laws of their radiation, light radiation from an atomic explosion, and injurious action of light radiation from an explosion and protection from it.

Of the 26 references listed, published in the period 1944-1946, 24 are Soviet and 2 are in English.

By light waves is meant the entire range of light waves, both visible and invisible (ultraviolet and infrared).

The book is intended to provide troops with an understanding of the hazards of light radiation resulting from an atomic explosion and the protective measures to be followed. (U)

SUM. 1345

ARKHIPOV, M., Engineer, Lt. Col., Candidate Tech. Sci.

"Atomic and Hydrogen Weapons," p. 5, from the Book, Modern Military Technology, 1956.

Translation 1114585

ARKHIPOV, M.

AID P - 4703

Subject : USSR/Aeronautics - Air defense

Card 1/1 Pub. 58 - 15/17

Authors : Arkhipov, M., Candidate in Technology, and A. Dorofeyev

Title : Engineer defensive means against atomic weapons

Periodical : Kryl. rod., 5, 21, My 1956

Abstract : The author passes in review different possible ways of protecting the population of inhabited localities from the effects of atomic attacks, and indicates where and how shelters may be organized. One design.

Institution : None

Submitted : No date

MAL'SHINSKIY, A.; KIRILLOV, P.; ARKHIPOV, M.

Without knowledge of the subject ("Local air defense." V. Sinitsyn and others. Reviewed by A. Mal'shinskii and others). Voen.znan. 31 no.6:31 Je '56. (MLRA 9:10)

(Civil defense) (Sinitsyn, V.)

ARKHIPOV, M., inzhener-podpolkovnik, kandidat tekhnicheskikh nauk.

Answer to readers questions: Critical mass of atomic change. Voen. znam. 31 no.8:30 Ag '56. (MLRA 9:11)
(Nuclear reactions)

ARKHIPOV, M., inzh.-podpolkovnik.

Perfidious plans of the enemies of peace. Voen. znan. 33 no.12:19-20 D '57. (MIRA 11:1)

(Atomic warfare) (World politics)