

KAZARNOVSKIY, D.S.; DYUBIN, N.P.; GERSHGORN, M.A.; KRAVTSOVA, I.P.;  
KLIMOV, K.N.; RUDOL'SKIY, N.L.; FRADIN, M.D.; SVIRIDENKO, F.F.;  
FRADINA, M.G.; ZANNES, A.N.; CHERNOVA, A.V.

Experimental railroad rails made of chromium-nickel native  
alloy steel. Stal' 22 no.6:548-550 Je '62. (MIRA 16:7)

1. Ukrainskiy nauchno-issledovatel'skiy institut metallov i  
zavod "Azovstal'".

(Chromium-nickel steel)  
(Railroads--Rails)

ZANNES, A.N., inzh.; RUDOL'SKIY, N.L., inzh.; FRADIN, M.D., inzh.;  
SAPELKINA, O.R., inzh.; BIKHUNOV, L.Ya., inzh.; GLOZMAN, M.I.,  
inzh.; Primalni uchastiye; DEMICHEV, A.D.; SUCHKOUSOV, V.P.;  
BLAGOVESHCHENSKIY, G.V.; GOLOVIN, G.F.; KAZARNOVSKIY, D.S.;  
RAVITSKAYA, T.M.

Surface induction hardening of rails along their whole  
length at the Azovstal' Plant. Stal' 24 no.8:731-734  
Ag '64. (MIRA 17:9)

1. Nauchno-issledovatel'skiy institut tokov vysokoy chastoty  
(for Demichev, Suchkousov, Blagoveshchenskiy, Golovin).
2. Ukrainskiy nauchno-issledovatel'skiy institut metallov  
(for Kazarnovskiy, Ravitskaya).

VEKSER, N.A.; KAZARNOVSKIY, D.S., kand. tekhn. nauk

Investigating the causes of the formation of defects on the  
rolling surface of all-rolled railroad wheels and ways of  
improving their quality. Sbor. trud. UNIIM no.9:338-348 '64  
(MIRA 18:1)

KAZARNOVSKIY, D.S., doktor tekhn.nauk (Khar'kov)

Improving the quality of rails. Put' 1 put.khoz. 9 no.4:15-17  
'65.

(MIRA 18:5)

EXPLANATION OF THE... (mirrored text)

... (mirrored text)

... (mirrored text) (MIRA 2F18)

ZANNES, A.N.; KAZARNOVSKIY, D.S.; SAFELKINA, O.R.; MIGOL', G.N.

Experiments in selecting the optimum quenching medium for  
hardening rails along their entire length with heating  
by high frequency currents. Sber.trud. UNIIM no.11,354-364  
165. (MIRA 18.17)

GERSHGORN, M.A.; KRAVTSOVA, I.P.; KAZARNOVSKIY, D.S., kand. tekhn. nauk;  
RYABININ, B.G.

Manganese Bessemer steel for rails. Met. i gorncrud. prom. no.5;  
23-26 S-0 '64. (MIRA 18:7)

RAVITSKAYA, T.M.; KAZARNOVSKIY, D.S.; Prinsipali uchastiyev KLIMENKO, A.N.;  
FADEYEVA, A.M.

Mechanism of the formation of defects of contact origin  
in rail heads. Sbor. trud. UNTIM no.11:324-333 '65.

(MIRA 18:11)



L 13051-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c) JD  
ACC NR: AP5027912

SOURCE CODE: UR/0133/65/000/011/1036/1039

AUTHOR: Kazarnovskiy, D. S. (Doctor of technical sciences); Dryapik, Ye. P. (Engineer); Legeyda, N. F. (Engineer); Zakharov, A. Ye. (Engineer); Balon, V. I. (Engineer); Vol'ter, Ye. V. (Engineer); Nosov, V. S. (Engineer); Konstantinova, T. A. (Engineer); Sukhomlina, A. P. (Engineer)

ORG: Ukrainskiy n.-i. Institute of Metals (Ukrainskiy n.-i. institut metallov); Kommunarskiy Metallurgical Plant (Kommunarskiy metallurgicheskiy zavod)

TITLE: Strengthening of low carbon semikilled St. 3ps steel by heat treatment

SOURCE: Stal', no. 11, 1965, 1036-1039

TOPIC TAGS: carbon steel, low carbon steel, heat treating furnace

ABSTRACT: A heat treatment was developed for St. 3ps steel plates of 12 and 25 mm thickness by heating in a furnace to the temperature range 890-920°C and water cooling on a quench press. This treatment resulted in an average strengthening of 20% and a satisfactory plasticity level. Three separate heats of steel were heat treated. The compositions ranged as follows: C--0.16-0.19%; Mn--0.46-0.52%; Si--0.08-0.12%; S--0.036-0.042%; P--0.012-0.034% and Cu--0.050-0.058%. The details of the process were described. The steel plates were heated in a roller type furnace to temperature for a holding time of 1.5 min/mm. Cooling was done in a quench press with a water flow

Card 1/2

UDC: 621.78

L 13051-66

ACC NR: AP5027912

rate of 1700 m<sup>3</sup>/hr. After quenching, some warpage could be noted, particularly in thicknesses up to 20 mm. Mechanical properties of the heat treated plate in flat and round specimens were determined. Yield strength, ultimate strength, % elongation, % reduction in area and impact resistance were tabulated for heat I (12 mm thick), heat II (12 and 25 mm thick) and heat III (25 mm thick). Frequency curves were plotted for the mechanical properties of the heat treated plate (frequency of occurrence as a function of strength, ductility and impact resistance) and average values were given for these properties. The effect of tempering after quenching was also noted. In general, the strength decreased slightly and the ductility increased. Tempering had little effect on impact resistance. Microstructures showed that the structures after quenching were predominantly pearlitic-ferritic, with needle-like ferrite distributed along grain boundaries for the 12 mm thick plates while in the 25 mm thick plates there was smaller grained, needle-like ferrite. The highest strengths and lowest ductility were obtained in the 12 mm plate. However, the mechanical properties obtained never fell below the following levels for the heat treated condition: yield stress--30 kg/mm<sup>2</sup>, ultimate strength--44 kg/mm<sup>2</sup>, % elongation--16, and impact strength (at -40°C)--3 kgm/cm<sup>2</sup>. It was recommended that low carbon steel plate, strengthened by the above treatment, be used in place of low alloyed steel. To be effective the optimum carbon content for heat treatment should be 0.12-0.18%. Orig. art. has: 3 figures 2 tables.

SUB CODE: 11/

SUBM DATE: 00/

ORIG REF: 004/

OTH REF: 000

Card 2/2

KAZARNOVSKIY, D.S., doktor tekhn. nauk; GERSHGORN, M.A., inzh.; SVIRIDENKO, F.F., inzh.; KRAVTSOVA, I.P., inzh.; SHNAPERMAN, L.Ya., inzh.

Development, adoption, and introduction of a low-alloy steel for heavy type railroad rails. Stal' 25 no.4:355-357 Ap '65. (MIRA 18:11)

1. Ukrainskiy nauchno-issledovatel'skiy institut metallov i zavod "Azovstal'".

PRIDANTSEV, M.V.; KAZARNOVSKIY, D.S.; DANILOV, V.N.; VEKSER, N.A.;  
NIKONOV, A.G.; BYKOV, N.F.

Isothermal treatment of rails. Stal' 25 no.4:358-361 Ap '65.  
(MIRA 18:11)

GERSHGORN, M.A.; SVIRIDENKO, F.F.; KAZARNOVSKIY, D.S.; KRAVTSOVA, I.P.;  
POPOVA, A.N.; FRADINA, M.G.; Primalni uchastiye: ILYASHOV, G.G.;  
RUDOL'SKIY, N.L.; SLEPKANEV, N.P.; PLISKANOVSKIY, S.T.; GORBANEV,  
Ya.S.; BUL'SKIY, M.T. [deceased]; ARKHANGEL'SKIY, Yu.N.; SHAROV,  
B.A.; VISTOROVSKIY, N.T.; RAKHANSKIY, B.I.; SAPOZHKOV, V.Ye.;  
RYABININ, N.G.; KARAKULINA, R.R.; FADEYEVA, A.M.; ZVEREV, D.A.

Improving the production of high-strength rails by alloying  
them with granulated ferrochromium in the ladle. Stal' 25  
no.5:408-411 My '65.

(MIRA 18:6)

1. Ukrainskiy nauchno-issledovatel'skiy institut metallov i zavod  
"Azovstal'".

ACC NR: AP6035654

(A)

SOURCE CODE: UR/0133/66/000/011/1028/1029

AUTHOR: Kazarnovskiy, D. S. (Professor, Doctor of technical sciences);  
Gunin, I. V. (Candidate of technical sciences); Krivono ov, Yu. I.  
(Candidate of technical sciences); Kravtsova I. P. (Candidate of tech-  
nical sciences); Saprygin, Kh. M. (Candidate of technical sciences);  
Arshavskiy, V. Z. (Candidate of technical sciences); Chatverikov, A. V.  
(Engineer); Mogilevskiy, I. I. (Engineer); Orinichev, S. I. (Engineer)

ORG: none

TITLE: Production technology for high-strength rails

SOURCE: Stal', no. 11, 1966, 1028-1029

TOPIC TAGS: high strength steel,  
metal cladding, railway track, bimetal, hot rolling/M75X steel,  
G13 steel, Rk5 steel, St.5 STEEL

ABSTRACT: An investigation had been made to develop a process for pro-  
ducing bimetallic rails, i.e. rails with a high-strength steel head.  
St.5 steel billets clad with M75X, G13, or Rk5 alloy steels were hot-  
rolled into 100 x 150 mm bars which, after reheating, were rolled into  
R-18 type rails. Rails with arc-deposited cladding had the highest bond  
strength and the most satisfactory surface quality. With M75X or Rk5-  
steel cladding, satisfactory results were obtained with cast composite

Card 1/2

UDC: 621.771.26

Card 2/2

BLOKHIN, V., konstruktor; KAZARNOVSKIY, F., konstruktor

The SK-4 combine. Sel'.mekh. no.3:44-45 '62.

(MIRA 15:3)

1. Kombaynovyy zavod, gor. Taganrog.  
(Harvesting machinery)

DANILOV, V.I. [Danylov, V.I.]; CHURSIN, M.I.; GAVRILOV, V.P.; KAZARNOVSKIY,  
(F.A. [Kazarnovs'kyi, F.A.]

Special problems of operating the electric equipment of SK-3 combines.  
Mekh. sil'hosp. 11 no.8:10-14 Ag '60. (MIRA 13:9)

1. Rabotniki Spetsial'nogo konstruktorskogo byuro zavoda "Rostsel'-  
mash" (for Danilov, Chursin). 2. Rabotniki DSKB pri Taganrogskom  
kombaynovom zavode (for Gavrilov, Kazarnovskiy).  
(Combines (Agricultural machinery)-- Electric equipment)



"APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721330003-2

APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721330003-2"

SHCHERBAKOV, D.I., akademik; FRUMKIN, A.N., akademik; KHACHATUROV, T.S.;  
VINOGRADOV, A.P., akademik; SOBOLEV, S.L., akademik; KOSTENKO, M.P.,  
akademik; TOLSTOV, S.P.; SAZHIN, N.P.; KAZARNOVSKIY, I.A.; VUL, B.M.;  
TROFIMUK, A.A., akademik

Discussion of the annual report. Vešt. AN SSSR 33 no.3:25-34  
Mr '63. (MIRA 16:3)

1. Chleny-korrespondenty AN SSSR (for Khachaturov, Tolstov, Sazhin,  
Kazarnovskiy, Vul).

(Academy of Sciences of the U.S.S.R.)

Kazarnovskiy, I.

Kazarnovskiy, I. and Proskurnin, M.

(Karpov Inst. for Chem., Moscow)

Z. Physik. 43, 512-5 (1927)

The electron affinity of hydrogen and the density of the alkali hydrides.

CA: 21-3253/1

~~SECRET~~

Kazarnovskiy, I.

Proskurnin, M. and Kazarnovskiy, I.

(Karpov Inst. Chem., Moscow)

Z. anorg. allgem. Chem. 170, 301-10 (1928)

Salt-like hydrides. III.

CA: 22-3851/8

~~SECRET~~

Kazarnovskiy, I.  
(Karpov Inst. for Chem., Moscow)  
Z. anorg. Chem. 170, 311-9 (1928)  
Salt-like hydrides. IV.

~~SECRET~~  
CA: 22-3343/6



~~REDACTED~~

Kazarnovskiy, I. A.

(Karpov Inst., Moscow)

Trans. Karpov Inst. Chem. (Moscow) 2, 93-98 (1930); Chem. Zentr. 1930II,  
1675-76.

Structure of inorganic peroxides.

~~REDACTED~~

Kazarnovskiy, I.

(Karpov Inst., Moscow)

Z. Physik. 61, 236-8 (1930)

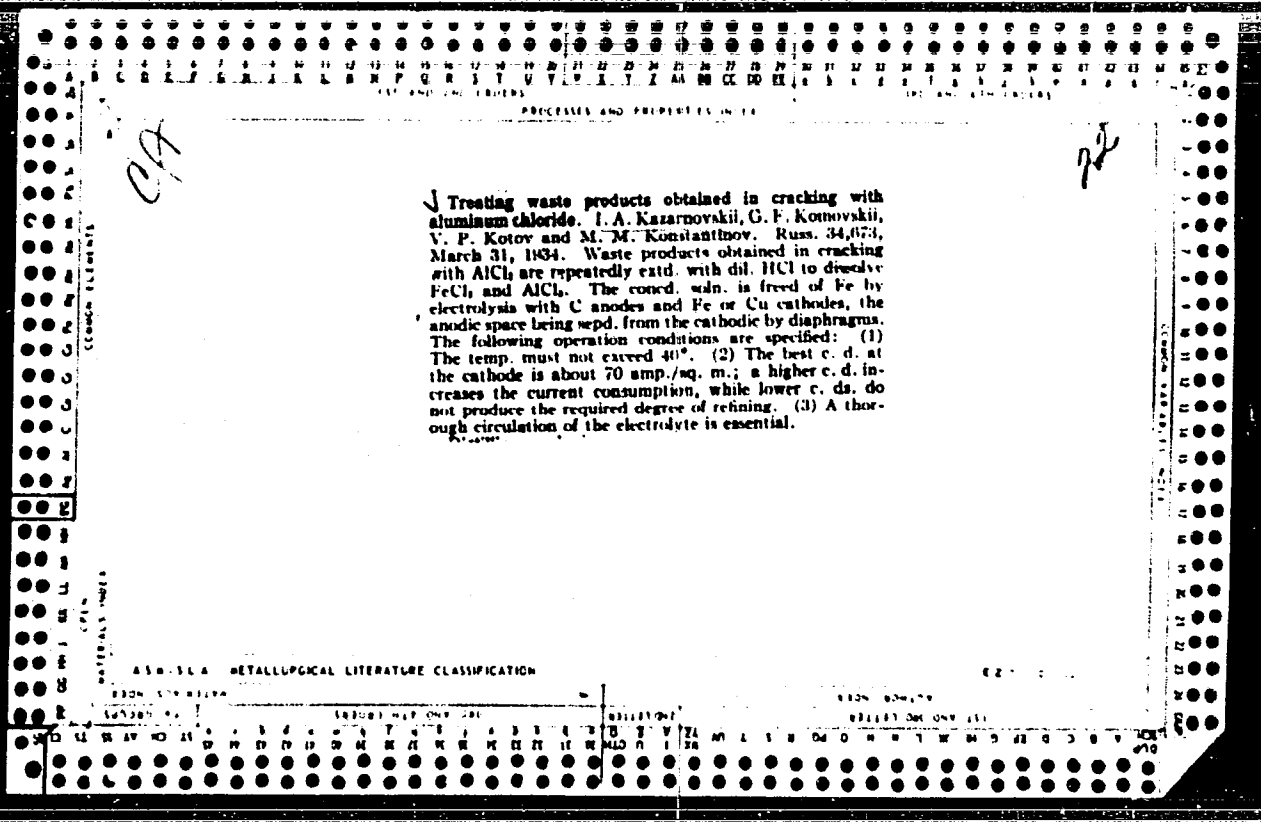
Lattice energy and compressibility of alkali hydrides.

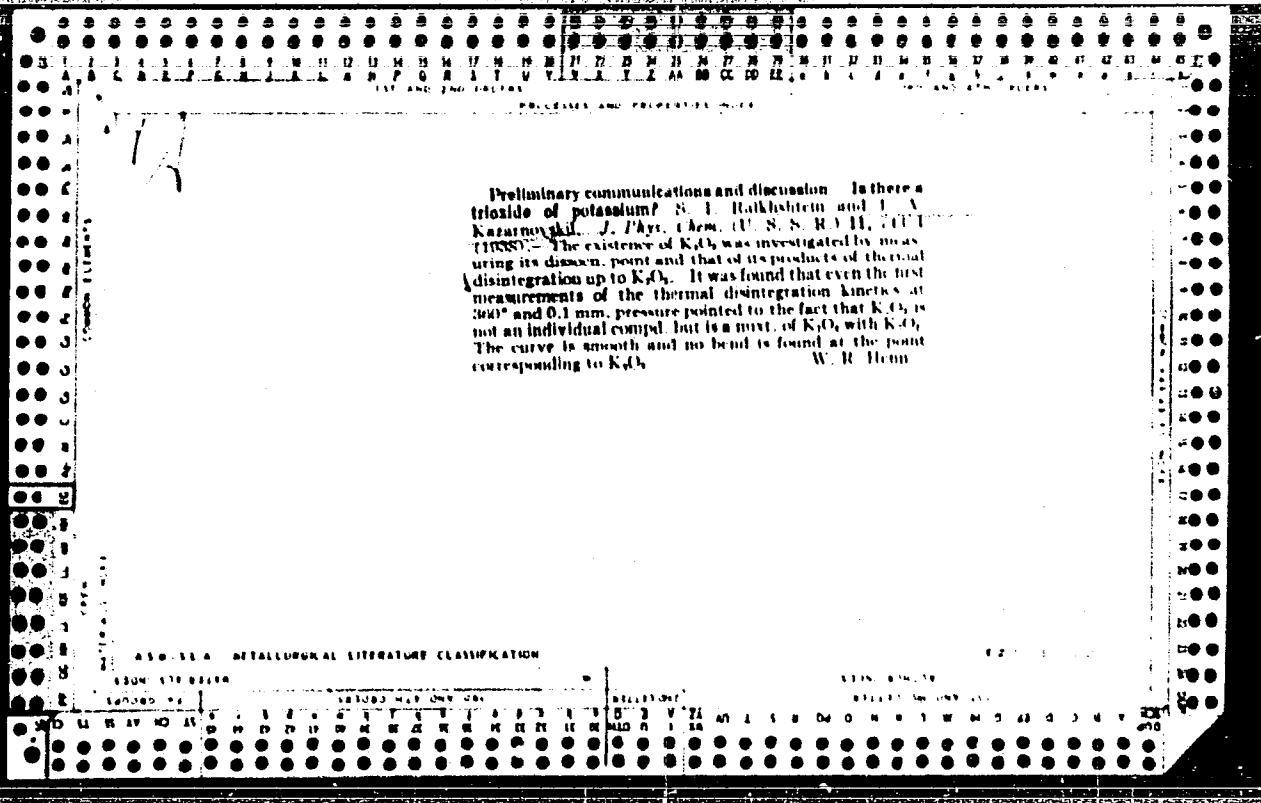
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CA: 24-4199/4

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ADDITIONAL, etc.

*Nuclear Sci Lib  
V-8, Jan 15, 1954  
Chemistry*

INORGANIC PEROXIDES. 11. THE HIGHER OXIDES OF POTASSIUM. I. A. Kazarnovskii and S. I. Raikhshtein.

Translated by Doonle [E.] Cushman from Zhur. Fiz. Khim. 21, 245-53 (1947) 16p. (UCRL-Trans-99; AEC-tr-1029)

The oxides  $KO_2$ ,  $RbO_2$ , and  $CsO_2$  and the molecular ion  $O_2^-$  were examined. Tensimetric investigations and density and refractive measurements showed that only three oxides of K exist:  $K_2O$ ,  $K_2O_2$ , and  $KO_2$ . The  $K_2O_2$  reported by some investigators is a mixture of  $K_2O_2$  and  $KO_2$ . The crystal structures of  $KO_2$ ,  $RbO_2$ , and  $CsO_2$  were determined. The heat of formation of  $K_2O_2$  was found to be 117.0 kcal. (J.S.R.)

4  
chem  
②

ME  
7-27-54

KAZARNOVSKIY, I. A.

Pa-2749

Mar 1947

USSR/Physical Chemistry - Apparatus Elasticity Measurements

"An Apparatus for Determination of Dissociation Pressure," S I Raikhshtein, and  
I A Kazarnovskiy, 4 pp

"Zhurn Fiz Khim" Vol XXI, No 3

Diagrams and operating data of subject equipment for elasticity measurements in dissociation  
of hard substances

KAZARNOVSKIY, I. A. and Kaykhshteyn, S. I.

"Higher Oxides of Potassium," 1948 Mendeleev Prize

Vestnik AS USSR 3/50

U-12748

LIST AND THE ORDER OF PROCESSES AND PROPERTIES INDEX

3

CA

**Electron affinity of the oxygen molecule.** I. A. Kazatnovskii (Karpov. Phys. Chem. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 59, 47-50(1948). In order to det. the electron affinity  $E$  of  $O_2$  by the Born-Haber cycle applied to  $KO_2$ ,  $RbO_2$ , and  $CsO_2$ , the lattice energies  $U$  were computed as the sums of the electrostatic energy, van der Waals energy, quadrupole energy of the  $O_2$  ion, and the energy of ionic repulsion. The Madelung consts. are found = 1.076, 1.077, and 1.083, resp.; the electrostatic energies = 185.1, 185.5, and 177.9 kcal./mole, resp.; the van der Waals energies = 13.7, 14.5, and 10.6, resp. The quadrupole potentials were calcd. on the assumption of an elongated rotation ellipsoid shape for the  $O_2$  ion with a point charge in the center; with a quadrupole moment of  $3 \times 10^{-26}$ , the quadrupole energy is found = 0.5, 5.5, and 4.4 kcal./mole, resp. The energies of repulsion are -43.7, -43.9, and -42.2 kcal./mole, resp. Hence,  $U' = 168.0, 161.6,$  and  $150.0$  kcal./mole, resp. and, with the literature data for the energies of formation, sublimation, and ionization,  $E = 31.0, 23.0,$  and  $22.3$  kcal./mole, resp., mean value  $E = 22.2 \pm 1.5$ . The possible error, mainly on the energy of repulsion, is estd. at not over 10 kcal./mole. N. Thon

ASB. 51.4 METALLURGICAL LITERATURE CLASSIFICATION



KAZARNOVSKIY, I. A.

USSR/Chemistry - Potassium Oxides  
Chemistry - Potassium Hydroxide

Jan 49

"Inorganic Peroxides, XI, The Higher Oxides of Potassium," I. A. Kazarnovskiy and  
S. I. Raikhshtein, 9 pp.

Zhurn. Fiz. Khim., Vol. XXI, No. 3

Theoretical discussion and experimental data with graphs and tables.

2T47

KAZARNOVSKIY, I. A.

PA 26/49T9

USSR/Chemistry - Potassium Oxides  
Chemistry - Potassium Hydroxide

Jan 49

"New Potassium Oxides," I. A. Kazarnovskiy, Corr  
Mem, Acad Sci USSR, G. P. Nikol'skiy, T. A.  
Abletsova, Lab Inorg Chem, Physicotech Inst imeni  
L. Ya. Karpov, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 1 *p. 67-72*

Investigated reaction of ozone on potassium  
hydroxide, and established characteristics of the  
orange substance forming during this reaction  
after finding it soluble in liquid ammonia. Sub-  
mitted 15 Nov 48.

26/49T9

KAZARNOVSKIY, I. A. and Raykhshteyn, S. I.

"Apparatus for Determining the Resistance of This Association," 1947 Mendeleev prize.

Vestnik AS USSR 3/50  
W-12746

CA

2

Anomalous magnetic properties of peroxides. A. B. Neiding and L. A. Kasargin (Karpov Phys.-Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 24, 1407-8 (1950); cf. *C.A.* 43, 1837g. — The magnetic susceptibilities of 2 yellow microcryst. powders contg. 86-91%  $\text{NaO}_2$  were measured by the Gouy method (1500 to 11,000 oersteds) between 18 and  $-196^\circ$  (error  $\pm 1.5\%$ ). The susceptibility presents a distinct max. at  $-80^\circ$ . The value of  $\chi_{\text{mol}}$  decreases from 2 magnetons at  $-80^\circ$  to 0.9 at  $-196^\circ$ . This is typical for antiferromagnetism, but in this case it would be due to  $\text{O}_2^-$  anions which are almost in contact with each other in the rock-salt structure of  $\text{NaO}_2$  (Templeton and Daulton, *C.A.* 44, 7117c). Further investigations are contemplated (susceptibility, heat capacity, x-ray structure at low temp.).  
Michel Boudart

127

17218

USSR/Chemistry - Hydrogen Peroxide 1 Oct 50

"Magnetic Susceptibility and Structure of Hydrogen Peroxide," A. B. Heyding, Corr Mem, Acad Sci USSR, I. A. Kazarnovskiy, Physicochem Inst Imeni L. Ya. Karpov

"Dok Ak Nauk SSSR" Vol LXXIV, No 4, pp 735-738

Det'd magnetic susceptibility at concn 6-98% at room temp and of 98% pure solid substance in temp range 5-183°. At high concn, straight-line relationship exists between concn and magnetic susceptibility. Magnetic data do not confirm existence of special hydrogen peroxide modification below-110°. That substance is diamagnetic excludes formula  $H_2O \dots O$

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USSR/Chemistry - Hydrogen Peroxide (Contd) 1 Oct 50

and that based on oxygen mol. Present results indicate similarity of electronic structure of O-O in hydrogen peroxide and metal peroxides. Correlation of magnetic and x-ray data shows equivalence of both O atoms in hydrogen peroxide.

17218

KAZARNOVSKIY I. A.,

KAZARNOVSKIY, I.A.

185T6

USSR/Chemistry - Oxidants

Mar 51

"Heat of Formation of Potassium Superoxide  $KO_2$ ,"  
L. I. Kazarnovskaya, I. A. Kazarnovskiy, Physico-  
chem Inst imeni L. Ya. Karpov, Moscow

"Zhur Fiz Khim" Vol XXV, No 3, pp 293-295

Measured heat of soln of  $KO_2$  in dil  $H_2SO_4$ . From  
results of measurements, calcd std heat of for-  
mation of  $KO_2$  from elements by reaction  $K$   
+  $O_2(gas) = KO_2(solid)$  to be  $67.9 \pm 0.1$  (solid)  
kcal.

185T6

KAZARNOVSKII, I. A.

Author: Nikol'skii, G. P., Bagdasar'yan, Z. A., and Kazarnovskii, I. A.

Title: Ozonides of sodium, rubidium and caesium.

Journal: Doklady Akademii Nauk SSSR, 1951, Vol. 77, No. 1, p. 69.

Subject: Chemistry

From: D.S.I.R. Oct 51

KAZARNOVSKIY, I. A.

114781

USSR/Chemistry - Oxidants

1 Jun 51

"On the Nature of the Higher Silver Oxide," A. B. Meyding, I. A. Kazarnovskiy, Corf. Mem. Acad. Sci. USSR, Lab. Inorg. Chem., Physicochem. Inst. Imzd. L. Ya. Karpov, 1951, 7, 83.

"Dok Ak Nauk SSSR" Vol. LXXVIII, No. 4, pp. 713-716, 1951.

Change of Ag to higher valency (AgO) involves transition  $4d10s \rightarrow 4d95s^2$ . AgO is diamagnetic in solid state, because Ag is trivalent in crystal lattice as result of formation of Ag-Ag bonds. Brown soln of AgO in concd nitric acid contains divalent silver, though, which is paramagnetic.

184711

USSR/Chemistry - Oxidants (Contd)

1 Jun 51

due to presence of unpaired electrons corr to 3d bond in the solid. AgO is not peroxide: It does not form hydrogen peroxide on acidification. It does distinguished from peroxides. AgO exerts oxidative effect due to change in valency of silver.

184711





KAZARNOVSKIY. I. A.

Oct 52

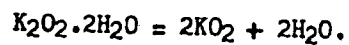
USSR/Chemistry - Hydrogen Peroxide

"Investigating the Decomposition Mechanism of Hydrogen Peroxide in Some Solid Perhydrates," I.A. Kazarnovskiy, Corr Mem, Acad Sci USSR, and A.B. Neyding

Physicochem Inst im L. Ya. Karpov

DAN USSR, Vol 86, No 4, pp 717-720

The mechanism of the decompn of  $K_2O_2 \cdot 2H_2O_2$  was studied and found to follow the eq



Source #264T16

KASARNOVSKIY, I. A., BAGDASARYAN, Z. A. and LIPKIN, N. P.

"A New Source of Free Hydroxyl Radicals in Solutions," report presented at the All-Union Conference on Chemical Kinetics, 23 June 1955.

Nature (British publication), Vol. 178, No.4524, 14 July 1956, p. 101

KASARNOVSKIY, I., LIPKIN, N. and TIKHOMIROV, M.

"Isotopic Exchange of Oxygen Between Free Hydroxyl Radicals and Water,"  
Nature (British publication), Vol. 178, No.4524, 14 July 1956.

English article.

Laboratory for Inorganic Chemistry, Karpov Inst. of Physical Chemistry, Moscow

KAZARNOVSKIY I A

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APPROVED FOR RELEASE: 06/13/2000

CIA-RDP86-00513R000721330003-2"

KAZARNOVSKIY I.A.

AUTHOR: None Given

TITLE: Awards of the Gold Medal and of Nominal Prizes (Prisuzhdeniye zolotoy medali i imennykh premiy) 30-2-33/49

PERIODICAL: Vestnik Akademii Nauk SSSR, 1950. Nr 2, pp 95-95 (USSR)

ABSTRACT: By resolution of the Presidency of the AN USSR the Gold Medal imeni V. V. Dokuchayev was awarded to A. A. Rode, Doctor of Agricultural Sciences for his publication "The Soil Moisture". Nominal Prizes of 20000 roubles each were distributed as follows:  
1) The award imeni D. I. Mendeleev to the Corresponding Member of the AS USSR I. A. Kazarnovskiy and to the Candidate of Chemical Sciences G. P. Nikol'skiy (posthumously) for their publication "The Discovery and Investigation of the Ozonides of Alkaline Metals";  
2) The award imeni M. V. Lomonosov for 1957 to a group of authors consisting of Ye. M. Lifshits, Doctor of Physical-Mathematical Sciences, B. V. Deryagin, Corresponding Member of the AN USSR, and I. I. Abrikosova, Candidate of Physical-Mathematical Sciences, for all their publications on the

Card 1/3

Awards of the Gold Medal and of Nominal Prizes

30-2-33/49

- theoretical and experimental investigation of the molecular attraction between solid bodies;
- 3) The award imeni P. L. Chebyshev for 1957 to N. M. Korobov, Doctor of Physical-Mathematical Sciences for his publications: "Numbers With Limited Relations and Their Use in Problems of Diophantine Approximations", "On Perfectly Regular Distribution and Common Normal Numbers", "Approximate Calculation of Divisible Integrals by Means of the Numeral Theory Method";
  - 4) The award imeni A. N. Bakha for 1957 to V. L. Kretovich, Doctor of Biological Sciences for his publication "The Foundations of Vegetable Biochemistry";
  - 5) The award imeni I. I. Mechnikov for 1957 to M. A. Peshkov, Doctor of Biological Sciences for his publication "Cytology of Bacteria";
  - 6) The award imeni V. L. Komarov for 1957 to a group of authors consisting of A. A. Fedorov, Doctor of Biological Sciences, M. E. Kirpichnikov, Candidate of Biological Sciences, and Z. T. Artyushenko, Candidate of Biological Sciences for their publication "Atlas of the Descriptive Morphology of Higher Vegetables. The Leaf.";
  - 7) The award imeni I. P. Pavlov for 1957 to A. I. Karanyan, Doctor of Medical Sciences for his publication "Evolution of

Card 2/3



Awards of the Gold Medal and of Nominal Prizes

30-2-33/49

the Functions of the Cerebrum of the Cerebellum";  
8) The award imeni P. P. Anosov for 1957 to A. I. Skakov,  
Doctor of Technical Sciences (posthumously) for his publi-  
cation "The Quality of Railroad Rails".

AVAILABLE:

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1. Scientific personnel-Awards-USSR
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3. Scientific research-Awards-USSR

Card 3/3

IN-11111111, 1-11

AUTHOR: None Given

SOV/62-58-8-22/22

TITLE: The General Meeting of the Department of Chemical Sciences of the AS USSR From April 24 to 25, 1958 (Obshcheye sobraniye otdeleniya khimicheskikh nauk AN SSSR ot 24-25 aprelya 1958 g.)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 8, pp. 1017 - 1018 (USSR)

ABSTRACT: At this General Meeting the following scientists delivered lectures: The Corresponding Members, Academy of Sciences, USSR, A. A. Grinberg, I. A. Kazarnovskiy, A. D. Petrov, and R. Kh. Freydlina, Doctor of Chemical Sciences. A. A. Grinberg reported on the new knowledge on the kinetics and the mechanism of the reactions of the exchange and the substitution in complex compounds of platinum. Based on experimental data the lecturer concluded that in the process of the isotopic exchange in the derivatives of bivalent palladium the dissociation and association mechanism play an important role. These explanations raised a vivid discussion in which mainly I. I. Chernyayev, Member, Academy of Sciences, USSR and the Corresponding Members, Academy of Sciences, USSR V. I. Spitsin, Ya. K. Syrkin, I. V. Tananayev, and A. D. Gelman, Doctor of Chemical Sciences, took part. I. A.

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The General Meeting of the Department of Chemical Sciences of the AS USSR  
From April 24 to 25, 1958

SOV, 62-48-8-22/22

Kazarnovskiy held a lecture on the investigations of the kinetics and the mechanism of the arbitrary decomposition of potassium ozonide (employing the magnetic method) carried out by himself and his collaborators (S. I. Reykhshteyn and L. N. Bykova, Candidates of Chemical Sciences). A. D. Petrov on behalf of the collaborators of the Institute of Organic Chemistry (V. F. Mironov, V. A. Ponomarenko, S. I. Sadykh-Zade and Ye.A. Chernyshev) reported on "The Synthesis of New Forms of Silicon Containing Monomers". He announced new results of investigations of the catalytic binding of hydride silanes with unsaturated and aromatic compounds not published up to now. In the discussion following this lecture V. V. Korshak, Corresponding Member, Academy of Sciences, USSR, said that the results obtained by the team of A. D. Petrov were of great importance. The corresponding conclusions had to be drawn from the influence exerted by silicon in the various groups on the reactivity of these compounds. The report delivered by R. Kh. Freydlina on "The Homolytic Isomerization in Solutions" raised great interest. This lecture was followed by a vivid exchange

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The General Meeting of the Department of Chemical Sciences of the AS USSR  
From April 24 to 25, 1958

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of opinions in which mainly the following Members, Academy of Sciences, USSR took part: I. L. Knunyants, A. N. Nesmeyanov, and N. N. Semenov, as well as the Corresponding Members, Academy of Sciences, USSR V. V. Nekrasov, Ya.K. Syrkin and A. D. Petrov. I. L. Knunyants said that the work carried out by R. Kh. Freydlina on the homolytic isomerization in solutions represented an important event in organic chemistry.

Card 3/3

AUTHORS: Kazarnovskiy, I. A., Corresponding Member, Academy of Sciences USSR, Lipikhin, N. P., Tikhomirov, N. V. SOV/2c-120-5-30107

TITLE: Isotopic Exchange of Oxygen Between the Free Hydroxyl Radical and Water (Izotopnyy obmen kisloroda mezhdu svobodnym gidroksil'nym radikalom i vodoy)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 5, pp.1048-1051 (USSR)

ABSTRACT: The free hydroxyl radical plays an important role in radiation chemistry and in the theory of the oxidation processes, as it is an intermediate. Only few and contradicting data exist on its reactivity (Refs 1 - 4). The authors investigated the reaction mentioned in the title ( $O^{16}H + H_2O^{18} \rightarrow H_2O^{16} + O^{18}H$ ). Potassium ozonide was used as a new source of the free OH radical (Refs 5, 6). The potassium ozonide is instantaneously decomposed by water at room temperature and at 0°C under violent oxygen separation. The reaction velocity of the hydroxyl amounts to the 4-5-fold of its dimerization velocity. The experiments showed that the oxygen produced in this connection is enriched with the isotope  $O^{18}$ . The reaction was carried

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Isotopic Exchange of Oxygen between the Free Hydroxyl Radical and Water

out in the apparatus (fig 1 a). Table 1 contains the results of the determination of the isotopic composition of the oxygen which escapes during the decomposition of potassium ozonide by heavy water, as well as the found degree of exchange. The degree of exchange between the free OH-radical and water at +30° and at 0° amounts to approximately 10% and is independent of the pH of the solution, as is shown. This confirms the actual exchange between the free OH-radical and not that between the O<sub>2</sub>-ions and the hydroxyl radicals. Moreover the isotopic composition of the oxygen in an average hydrogen peroxide was determined. It was found that the enrichment of H<sub>2</sub>O<sub>2</sub> with isotope O<sup>18</sup> was several times greater than that of oxygen liberated directly during the decomposition of KO<sub>3</sub> by heavy water. Table 2 shows data on the isotopic composition of oxygen in the superoxide. Herein we may conclude that this oxygen is enriched with the isotope O<sup>18</sup> by 3-4-fold (3 times on the average). This result is substantiated by the assumption that during the decomposition of KO<sub>3</sub> with water free OH-radicals actually form H<sub>2</sub>O<sub>2</sub>. The experiments of the authors disprove Winton's (1957) opinion that the radical diffuses according to a normal and not according to the

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5(2)

AUTHORS:

~~Kasarnovskiy~~, I. A., Corresponding Member, Academy of Sciences, USSR, Raykhshteyn, S. I.,  
Bykova, L. N. SOV/20-123-3-26/54

TITLE:

Investigation of the Reaction Mechanism of Spontaneous Decomposition of Potassium Ozonide by the Magnetic Method  
(Issledovaniye mekhanizma reaktsii samoproizvol'nogo raspada ozonida kaliya s primeneniye magnitnogo metoda)

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 3, pp 475-478 (USSR)

ABSTRACT:

It is seen from the kinetics of the reaction under review (Ref 1) that this reaction takes place according to the equation  
 $2 \text{KO}_3 = 2 \text{KO}_2 + \text{O}_2 + 11.6 \text{ kcal}$ . It is autocatalytic and its induction period amounts at 18, 0, -9, -18°, respectively, to 1.67, 20, 54, 205 days (24 hours each), respectively. In the subsequent active period the decomposition rate of potassium ozonide increases rapidly; the activation energy is 22-23 kcal/mol. The magnetic measurements were carried out at the same time as the kinetic ones at 18-20° and 0°. As is known, the initial and final product are of paramagnetic nature. Both products had

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Investigation of the Reaction Mechanism of  
Spontaneous Decomposition of Potassium Ozonide by the Magnetic Method

SOV/20-123-3-26/54

$\chi_g$ -values which were largely in accordance with previous data (Refs 2-4). Table 1 and figure 1 present the results of some measurements (in which V. I. Smirnova assisted). The deviations from the additivity indicate the formation of a highly paramagnetic intermediate product. This might be most probably the atomic oxygen the magnetic susceptibility of which exceeds several times that of  $KO_3$  and  $KO_2$ . An intermediate formation of oxygen atoms was confirmed by the separation of ozone traces which had oxidized the surface of the mercury in the manometer tube. The quantity of atomic oxygen in various stages of the process may be determined according to the data concerning magnetism and according to the weight of the solid reaction products. For this purpose equations are suggested. The values computed according to them (for one of the experiments) are presented in table 2. It may be seen from them that the content of atomic oxygen in the solid phase increases at the beginning of the decomposition, surpasses a maximum at a  $KO_3$  decomposition of 60% approximately, and afterwards drops to zero at a 100% decomposition.

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Investigation of the Reaction Mechanism of  
Spontaneous Decomposition of Potassium Ozonide by the Magnetic Method

SOV/20-123-3-26/54

When the maximum is exceeded, the solid phase contains about 15% of the total amount of atomic oxygen; it attains its maximum quantity (up to 25%) towards the end of the induction period and at the beginning of the active period. This result confirms the hypothesis (Ref 1) regarding the nature of the induction period which is based on the theory of defective crystalline structures. Further experiments have proved that: a) the formation of molecular oxygen forms a first order reaction with respect to atomic oxygen (Fig 2). Therefore, a recombination mechanism is improbable, and a reaction of the oxygen atoms with the ozonide ions is more probable:  $O + O_3^- = O_2^- + O_2$ . The further kinetic analysis displays the same regularity for the formation rate of atomic oxygen as that valid for the separation rate of molecular oxygen: a curve with a distinctly marked topochemical maximum (Fig 3). Thus, both of the elementary decomposition processes of  $KO_3$  into  $KO_2$  and oxygen take place mainly at the phase-separation boundary. There are 3 figures, 2 tables, and

Card 3/4

Investigation of the Reaction Mechanism of  
Spontaneous Decomposition of Potassium Ozonide by the Magnetic Method  
SOV/20- 123- 3- 26/54  
5 references, 3 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im.  
L. Ya. Karpova (Scientific Physico-Chemical Research Institute  
imeni L. Ya. Karpov)

SUBMITTED: August 14, 1958

Card 4/4

KAZARNOVSKIY, I.A.; LIPIKHIN, N.P.; KOZLOV, S.V.

Reaction of free hydroxyl radicals and oxygen with acetic acid vapors. *Izv.AN SSSR Otd.khim.nauk* no.5:956 My '63. (MIRA 16:8)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.  
(No subject headings)

KAZARNOVSKIY, I. A.

"Recent experiments concerning the reactivity of the free hydroxyl radical."  
report submitted for 10th Anniversary Festivities, Leuna-Merseburg Tech Inst  
for Chemistry, Leuna-Merseburg, E. Germany, 2-7 Nov 64.

FEDORENKO, N.P., akademik; SUKACHEV, V.N., akademik; KARAKHEYEV, K.K.; FRANK, G.M.; KONSTANTINOV, B.P., akademik; ASTAUROV, B.L.; YEFIMOV, A.N.; SHUMILOVSKIY, N.N.; ISHLINSKIY, A.Yu., akademik; GERASIMOV, I.P., akademik; KAZARNOVSKIY, I.A.; BYKHOVSKIY, B.Yu., akademik; ZHEBRAK, A.R., akademik

Discussion of the annual report. Vest.AN SSSR 35 no.3:95-112  
Mr '65.

(MIRA 18:4)

1. Prezident AN Kirgizskoy SSR (for Karakeyev).
2. Chleny-korrespondenty AN SSSR (for Frank, Astaurov, Yefimov, Kazarnovskiy).
3. AN Kirgizskoy SSR (for Shumilovskiy).
4. AN BSSR (for Zhebrak).

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$2H_2 + O_2 \rightarrow 2H_2O$ ; (ii)  $4OH \rightarrow 2H_2O + O_2$ ; (iii) and (iv) ...  
be explained on the basis of ...

$2H_2 + O_2 \rightarrow 2H_2O$  ...

KAZARNOVSKIY, I. M. Cand. Med. Sci.

Dissertation: "Differential Diagnosis Between Acute Appendicitis and Renal Colic."  
Central Inst. for Advanced Training of Physicians. 8 Apr 47.

SO: Vechernyaya Moskva, Apr, 1947 (Project #17836)



KAZARNOVSKIY, I. M.

25930 Kazarnovskiy, I. M. Vnutrivennaya urografiya kak metod differentsial', noy diagnostiki mezhdyy ostrym appenditstom i pochechnoy kolikoy. Sbornik nauch. rabot lecheb. uchrezhdeniy Mosk. voyen. okr. Gor'kiy, 1948, s. 130-39.

SO: Letopis' Zhurnal Statey, No. 30, Moscow, 1948.

250h2 Kayarnovskiy, I. K. Zametil'naya Genotransfuziya Pri Ostrer  
Nefrite. Sbornik Nauch. Rabot Lecheb. Uchrezhdeniy Mosk. Yezh. n.  
OKL. Gor'kiy, 1948, S. 110-46

CC: Ietopic' Zhurnal Staley, No. 30, Moscow, 1948

Kazarnovskiy, I. M.

25957 Kazarnovskiy, I. M. Raneniye poloy veny pri nefrektomii. Sbornik  
nauch. rabot lecheb. uchrezhdeniy Mosk. Voen. okr. Gor'kiy,  
1948, s. 153-56.

SO: Letopis' Zhurnal Statey, No. 30, Moscow, 1948

KAZARNOVSKIY, I.M.

Renal-appendicular syndrome. Khirurgia, Moskva no.5:62-67 May 51.  
(GMLL 20:9)

1. Lt Col., Medical Corps and Candidate Medical Sciences.

KAZARNOVSKIY, I.M., kandidat meditsinskikh nauk (Moskva)

Combined diseases of the kidneys in nephrolithiasis. Urologia  
no.1:62-66 Ja-Mr '55. (MLRA 8:10)

(KIDNEYS, calculi,  
compl.)  
(CALCULI,  
kidneys, compl.)

USSR / Pharmacology. Toxicology. Vitamins.

V

Abs Jour : Ref. Zhur - Biologiya, No. 3, 1959, 13974

Author : Kazarnovskiy, L. S.

Inst : Kharkov Pharmaceutical Institute

Title : A drug from the Wild Rose "Kholokaz".

Orig Pub : Tr. Khar'kovsk. farmatsevt. in-ta, 1957, vyp. 1,  
277-282

Abstract : No abstract

Card 1/1

KAZARNOVSKIY, L.S.

BORISYUK, Yu.O.; KAZARNOVSKIY, L.S.; KRASOVSKIY, N.P. [deceased];  
SEMIN'KO, V.A.

Kharkov Pharmaceutical Institute on the 40th anniversary of the  
Great October Socialist Revolution. Apt.delo 6 no.6:10-13 N-D '57.  
(KHARKOV--PHARMACY--STUDY AND TEACHING) (MIRA 10:12)

*KAZARNOVSKIY, L.S.*

GUREVICH, V.G.; KAZARNOVSKIY, L.S.; KARAVAY, N.Ya.

Preventing scale formation in distillation apparatus during the  
production of distilled water in pharmacies. Apt.delo 7 no.2:43-44  
Mr-Ap '58. (MIRA 11:4)

1. Iz Khar'kovskogo farmatsevticheskogo instituta.  
(DISTILLATION APPARATUS)



KAZARNOVSKIY, L.S.; LOKHVITSKAYA, M.F.; LYSENKO, L.V.; PIVNENKO, G.P.;  
SERGEYENKO, T.A.; SILA, V.I.; SOTNIKOVA, O.M.; CHUYKO, O.V.

Comparison of methods for preparing and analysing infusions [with  
summary in English]. Apt.delo 8 no.1:64-71 Ja-F '59.

(MIRA 12:2)

1. Iz Khar'kovskogo farmatsevticheskogo instituta (dir. - dots.  
Yu.G. Borisyuk) Ministerstva zdavookhraneniya USSR.

(EXTRACTS)

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

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

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

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

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

1. Khar'kovskiy farmatsevticheskiy institut.

PIVENKO, G.P.; SUKHOMLINOV, A.K.; KAZARNOVSKIY, L.S.

Planned curriculum for pharmaceutical institutes (faculties).  
Apt. delo. 11 no.5:48-51 S-0 '62. (MIRA 17:5)

1. Khar'kovskiy farmatsevticheskiy institut.



ADDITIONAL INFORMATION

COMPLETE AVAILABLE INFORMATION

ASSOCIATION: Khar'kovskiy farmatsevticheskiy institut (Kharkov Institute of Pharmacy)

SUBMITTED: 13Apr64

ENCL: 00

REF: 001

NR REF SOVS: 001

OTHER: 000

000

Card 2/2

SERGIYENKO, T.A.; KAZARNOVSKIY, L.S.

Phytochemical study of *Acinos thymoldea* Moench. *Spt. delo* 14  
no. 2: 31-33 *Mr-Apr '65.* (MIRA 19:1)

1. Khar'kovskiy farmatsevticheskiy institut. Submitted  
February 14, 1964.





PROCESSES AND PROPERTIES

Transformer plates with high magnetic permeability along the direction of rolling. A. S. Zaimovskii and I. Sh. Kazapovskii. *Kachestvennaya Stal* 4, No. 8 0, 10 22 (1936); *Chem. Zentr.* 1937, I, 2245. Studies are reported on the texture of transformer Fe with 3.4% Si after cold-rolling and subsequent annealing. With only one rolling and one annealing under no conditions could a texture be obtained with the crystal axis (1 0 0) along the direction of rolling. This condition was first obtained through cold rolling twice with a decrease in thickness of 60-65% and annealing twice at 1050-1100°. For transformer metal so treated the permeability values at an induction of 15,000-17,000 gauss are 1.5 to 3 times higher than those of the best specimens of normal transformer steel. Metallographic and x-ray investigations indicated that the crystal structure so obtained satisfies the specifications of Sixtus and Bazorth.

M. G. Moore

ASM - 56 A METALLURGICAL LITERATURE CLASSIFICATION



PROCEEDINGS AND PROPERTIES INDEX

18

**Investigation and Production of High Permeability Iron-Nickel Alloys.** A. N. Zaymovskiy and L. Sh. Kazarmovskiy. (Kachestvennaya Stal, 1938, No. 3, pp. 37-42). (In Russian). Iron-nickel alloys with about 50%, 65% and 78.5% of nickel were prepared and their heat treatment and magnetic properties were investigated. Ordinary Armco iron and nickel shot, which had not been vacuum melted, were used and the alloys were made by melting in a 50-kg. H.F. induction laboratory furnace. The ingots were forged into billets 200 x 600 x 25 mm., which were hot-rolled down to sheet 1-1.3 mm. thick and finally cold-rolled down to 0.30 mm. thick. The material was annealed in a hydrogen atmosphere at 1000-1200 C. for 2-10 hr. and then cooled at different rates. After annealing, the specimens were found to have the following magnetic properties:

Alloy.	Initial Permeability.	Max. Permeability.
50/50 nickel-iron	2,000-3,000	65,000-80,000
65/35 nickel-iron	2,800-3,600	130,000-270,000
78.5/21.5 nickel-iron	6,000-12,000	120,000-170,000

In spirally-wound transformer cores weighing 2-3 kg. the 78.5% nickel Permalloy had an initial permeability of 4,000 and a maximum permeability of 57,000. Owing to the experimental nature of the work there was as much as 50% of scrap, and this made the cost of the material comparatively high.

METALLURGICAL LITERATURE CLASSIFICATION



ZAYMOVSKIY, A.S., professor, doktor tekhnicheskikh nauk; <sup>L.</sup> KAZARNOVSKIY, A.Sh.,  
inshener; KIPER, I.I., inshener.

Pressed magnets. Vest.elektroprom. 18 no.5:19-22 '47. (MLRA 6:12)

1. Nauchno-issledovatel'skiy institut MEK.

(Magnets)

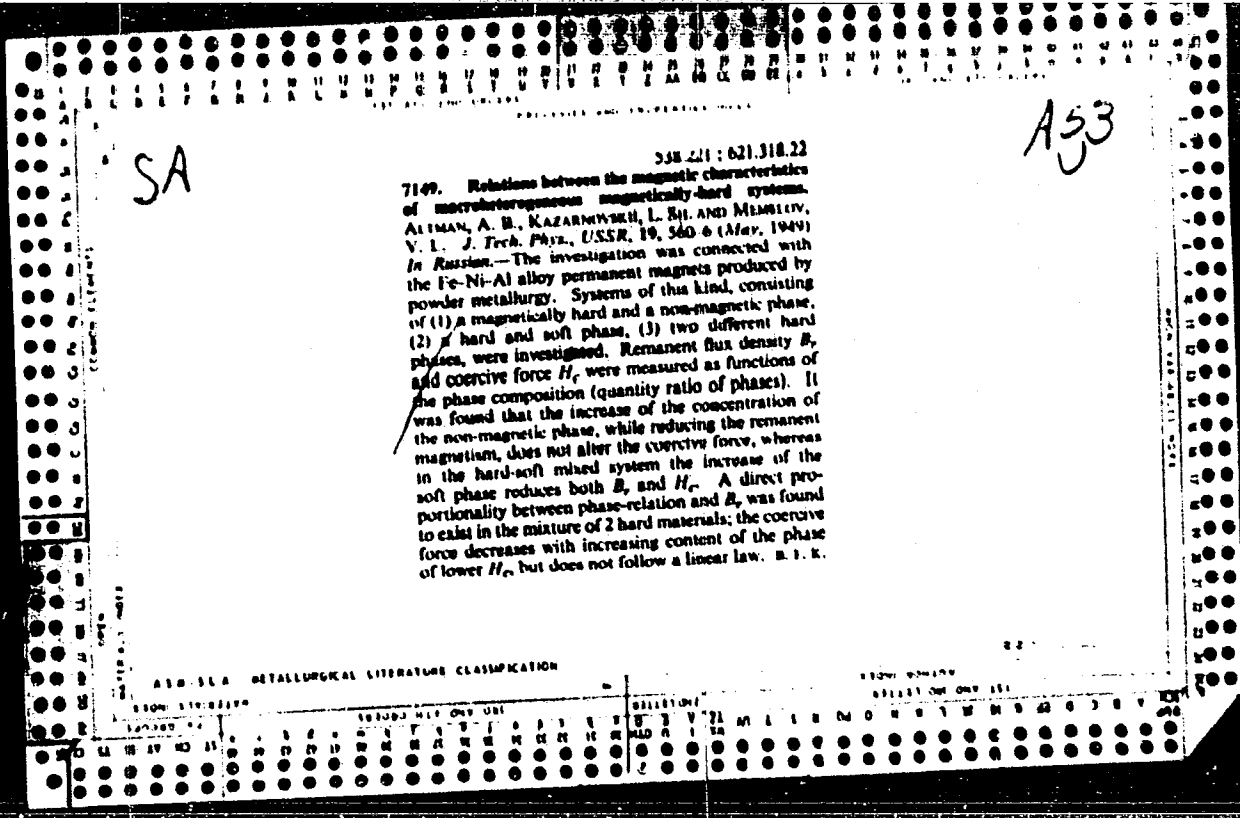
KAZARNOVSKIY, I. Sh.

"Pressed Magnets." Thesis for degree of Cand. Technical Sci. Sub 28 Jun 49, Scientific Council of Sci Res Inst. Ministry of Electrical Industry USSR

Summary 82, 18 Dec 52, Dissertations Presented for Degrees in Science and Engineering in Moscow in 1949. From Vechernyaya Moskva, Jan-Dec 1949.

KAZARNOVSKIY, L. Sh.

"Development of Magnetic Materials," Elektrichestvo, No.6, 1949





KAZARNOVSKIY, I. SH.

USSR/Physics - Magnetic Materials

Mar 52

2447104  
"Calculation of the Magnetic Properties of Macroheterogeneous Magnetically-Hard Systems," I. Sh. Kazarnovsky

"Zhur Tekh Fiz" Vol 22, No 3, pp 537-542

2447104  
Gives a method for calculating the coef of self-demagnetization of macroheterogeneous magnetically-hard systems [author's term for pressed or metal-plastic magnets made by pressing a powder consisting of a crushed high-coercive alloy and a non-magnetic binding material]. Also obtains dependency of this coefficient upon content of ferromagnetic phase and

Gives a method for constructing the hysteresis loop of such magnets. Submitted 10 Sep 51.

2447104

KIFER, isaak Iosifovich; PANTYUSHIN, Vasilii Sergeevich; KAZARNOVSKIY,  
L. Sh, redaktor; FRIDKIN, A.M. tekhnicheskii redaktor

[Testing ferromagnetic materials; magnetic measurements] Ispytaniia ferromagnitnykh materialov; magnitnye izmereniia. Moskva, Gos. energ.izd-vo, 1955. 240 p. (MLRA 8:8)  
(Ferromagnetism)

RUSSIAN

AID P - 3450

Subject : USSR/Electricity  
Card 1/1 Pub. 27 - 17/32  
Author : Kazarnovskiy, L. Sh., Kand. of Tech. Sci.  
Title : ~~RUSSIAN~~ The new standard for electrical sheet steel  
Periodical : Elektrichestvo, 10, 63-66, 0 1955  
Abstract : The author compares the old GOST 802-41 with the new GOST 802-54. The new standard includes ordinary hot-rolled steel and cold-rolled magneto-anisotropic steel. The marking of steel types is numerical instead of by letter. The assortment of sheets is greatly enlarged, but some little used sizes are dropped.  
Institution : Scientific Research Institute of the Ministry of Electrical Industry  
Submitted : Mr 14, 1955

KALARKNOYSKIY, L. Sh.

KAZARNOVSKIY, L.Sh., kand. tekhn. nauk; LEONT'YEV, Ye.V., inzh.

Astatic electrodynamic coercive force meter. Vest. elektroprom.  
27 no.8:27-31 Ag '56. (MLRA 10:9)

1. Nauchno-issledovatel'skiy institut Ministerstva elektrotekhnicheskoy promyshlennosti.  
(Magnetic instruments)

USOV, Vladimir Vasil'yevich; ZAYMOVSKIY, Aleksandr Semenovich;  
KAZARNOVSKIY, L.Sh., red.; VORONIN, K.P., tekhn.red.

[Conductor, rheostat and contact materials] Provodnikovye  
reostatnye i kontaktnye materialy. Moskva, Gos.energ.isd-vo,  
1957. 184 p. (Metally i splavy v elektrotekhnike vol.2)

(MIRA 11:1)

(Electric engineering--Materials)

KAZARNOVSKIY, L. SH

Call Nr: None given

AUTHORS: Zaymovskiy, A. S., Chudnovskaya, L. A.

TITLE: Magnetic Materials (Magnitnyye materialy). Vol. 1.

PUB. DATA: Gosudarstvennoye energeticheskoye izdatel'stvo, Moscow-Leningrad, 1957, 224 pp., 8,000 copies.

ORIG. AGENCY: None given

EDITORS: Ed.-in-Chief: Kazarnovskiy, L. Sh.; Tech. Ed.: Voronin, K. P.

PURPOSE: This monograph is intended for engineers and workers in the electrical and instrument producing industries, as well as for metallurgists, metallo-physicists and metallographers.

Card 1/10

Magnetic Materials (Cont.)

Call Nr: None given

COVERAGE: The book is devoted to the study of the properties of metals, alloys and compositions and to their behavior under operational conditions, and to the effect on their properties due to composition and processing in the consumer plants. Vol. I describes the general laws which connect composition and structure with magnetic properties of ferromagnetic materials and the more important industrial magnetic alloys: technically pure iron, electrical sheet steels, and special alloys, such as Permalloy, Permendur, Alsiifer, ferrites, magneto-dielectrics and alloys and compositions for permanent magnets. Structural material used in electric machinery and apparatus is briefly discussed including carbon and alloy steels as well as nonmagnetic steels and cast iron. Vol. II will deal with materials for conductors; rheostats and contacts. Soviet and foreign contributions are noted. The following Soviet scientists are mentioned in the foreword in connection with their valuable contributions to the field of magnetism: Akulov, N. S.; Vonsovskiy, S. V.; Kondorskiy, Ye.I.; Landau, L. D.; Lifshits, Ye. M. References are given at the end of every chapter except Ch. 2. There are 235 references, 135 of which are USSR.

Card 2/10

110-1-11/19

AUTHOR: Kazarnovskiy, L.Sh., Candidate of Technical Sciences

TITLE: Materials for the Rotors of Hysteresis Motors (Materialy dlya rotorov gisterezisnykh elektrodvigatelye)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, Vol.29, No.1, pp. 48 - 56 (USSR).

ABSTRACT: Until recently only low-power hysteresis motors were manufactured in the USSR. Extensive developments in automatics and telemechanics make it necessary to complete the development of a series of synchronous hysteresis motors of outputs up to 100 kW at 1 500 r.p.m. and to commence their mass-production. The conditions of operation of magnetically-hard materials in the rotor of a hysteresis motor are quite different from those of permanent magnets used in synchronous motors. Therefore, the usual criteria of desirable properties do not apply. The first attempt to formulate the requirements for materials for hysteresis motors were made by Jüschke; Roters and Kolkiewisz did not carry the question much further. The requirements are formulated in the most detailed manner by Gorzhevskiy (Vestnik Elektropromyshlennosti, 1957, No.8). The present article makes a comparative evaluation of magnetically-hard material as applied to the more common design of motor in which the rotor Card1/5 is mainly subjected to cyclic re-magnetisation in a symmetrical



Materials for the Rotors of Hysteresis Motors

110-1-11/19

hysteresis cycle.

The first criterion of the material is the shape of the hysteresis curve. Ideally, the cycle should be elliptical; the nearest practical approach is a parallelogram with the steepest possible vertical sides and angles near  $90^{\circ}$ . Three other criteria are given, the last of which is the B/H curve. The four criteria taken together are called the hysteresis characteristics of the material.

As there is very little published data about the hysteresis characteristics of magnetically-hard materials, the authors investigated a number of materials and also reviewed available published data. New methods of heat-treating known materials were developed and new high-coercivity alloys were developed in the iron-nickel-aluminium-cobalt-copper series for use in the rotors of hysteresis motors. The measurements and heat treatments were done by A.A. Agafonov and A.I. Stroganova. The first materials considered are martensitic steels, the characteristics and properties of which are given in Table 1 and in Figs. 1, 2 and 3. The best heat-treatments for chrome steels were determined. The best field intensity for chrome steels is in the range 70 - 100 Oe. Tungsten steel E7B6 is in  
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Materials for the Rotors of Hysteresis Motors

110-1-11/19

all respects superior to chrome steel. Cobalt steels are as good as tungsten steels, but the best field values are higher and in the range 100 - 550 Oe, depending on the cobalt content. The hysteresis characteristics of high-coercivity alloys of the system iron-nickel-aluminium-cobalt-copper are given in Table 2 and in Figs. 4 and 5. The data shows that the usual high-coercivity alloys have very high hysteresis losses. Brief mention is made of the influence of composition on the loss. Investigations were made on cold-worked magnetically-hard alloys. Copper-nickel-iron alloy has long been used for permanent magnets. The author's tests on alloy M~~X~~H gave similar results (see Table 3 and Figs. 6 and 7) to those obtained by J~~u~~schke on similar alloys.

Alloys of iron-cobalt-molybdenum were studied in detail by W. K~~o~~ster and others. The best results were obtained with alloys of 15 and 17.5% molybdenum. The hysteresis characteristics are given in Table 3 and Figs. 7 and 8. Alloys of iron-nickel-manganese require cold working and, therefore, can only be used in the form of cold-rolled sheet. A study was made of the influence of annealing. Hysteresis characteristics are given in Table 3 and in Figs. 6 and 7.

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Materials for the Rotors of Hysteresis Motors

110-1-11/19

An alloy of iron-cobalt-vanadium is one of the most easily worked materials for the manufacture of permanent magnets. However, the first attempts to use this alloy for rotors of hysteresis motors were unsuccessful. A study was, therefore, made of the possibility of modifying the hysteresis characteristics of the alloy and an appropriate heat treatment was devised. Data about the hysteresis characteristics of the alloy are given in Table 3 and Figs. 9 and 10.

A comparison is then made between the merits of the different alloys. Magnetically isotropic alloys are of benefit only in two pole motors; in other cases, the anisotropy is of no advantage. The comparative evaluation of the materials which is given in this article is based on criteria which have not been fully proved in practical experience. Moreover, the data of different authors sometimes differ because of different measuring procedures and the small number of results. Therefore, the investigation of promising materials should be considered in more detail. An account is given of the ease of manufacture of the different materials considered. Finally, an analysis is made of cost and supply position. The cheapest and most readily available materials are chrome steels.

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Materials for the Rotors of Hysteresis Motors

110-1-11/19

Tungsten steel is about fifteen times the price of chrome steel. Cobalt steels are still more expensive and scarce. The other materials are similarly analysed in turn, with the conclusion that the most expensive and scarce alloys are those of iron-cobalt-vanadium containing 52% of cobalt. There are 10 figures, 3 tables and 7 references, 1 of which is Russian, 1 English and 5 German.

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