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KAMENSKA,  
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Z/034/61/000/001/007/021  
E073/E535

AUTHORS: Mazanec, Karel, Engineer, Candidate of Technical Sciences  
and Kamenská, Emilie, Engineer

TITLE: Contribution to the Study of Surface Tension on the  
Austenite Grain Boundaries 20

PERIODICAL: Hutnické listy, 1961, No.1, pp.41-49

TEXT: The surface energies of melts have been measured by numerous authors and adequate data are available. However, few measurements have been made of the surface tension of solid substances or at the grain boundaries. For steel, only the data published by Van Vlack (Ref.2) on the absolute values of the surface tension at the austenite grain boundaries are available. The views of Read and Schockley (Ref.3) on the properties of grain boundaries have been experimentally verified as a function of the grain orientation by a number of authors, for instance Dunn, Daniels and Bolton (Ref.4) and Aust and Chalmers (Ref.5). So far, no work has been published in Czechoslovakia on measuring the relative and absolute surface tension at the grain boundaries of steel. In this paper the results are published of measurements of the relative energy at the grain boundaries of two different phases (ferrite and Card 1/5

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austenite) and on the austenite grain boundaries. In the final part of the paper an attempt is made to determine the absolute surface tension of austenite by means of a modification of the Sears method (Ref.7). The relative values of the surface tension at the austenite-ferrite grain boundary for the isothermal decomposition temperature of 750°C, determined by means of statistical evaluation of the angles between individual grains measured in the plane of the polished section, were found to be:  $\sigma_{\alpha\gamma} \approx 0.7 \sigma_{\gamma\gamma}$  and

$\sigma_{\alpha\delta} \approx 0.9 \sigma_{\gamma\gamma}$ . For the interphase  $\delta$ -ferrite-austenite, the following relations were found to apply for the temperature range 1000 to 1200°C:  $\sigma_{\delta\gamma} \approx 0.83 \sigma_{\gamma\gamma}$  and  $\sigma_{\gamma\delta} \approx 1.2$  to  $1.4 \sigma_{\delta\delta}$ .

Further statistical data were obtained and a critical analysis was made of the applied method of measuring the relative surface tension between two phases. The theoretical frequency curve for angles of 85° between grains was determined and this curve is compared with experimentally determined curves of frequencies with a modal value

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of  $\theta = 85^\circ$ . The two curves were found to be in good agreement; the modal value of the angle determined experimentally is in agreement with the real angle between the two grains investigated. By means of vacuum etching of the surface of specimens, a method was developed of measuring the relative surface energy  $\sigma_{hr}$  between the austenite grains. The specimens were etched in the temperature range 1050 to 1100°C for durations of 48 hours, maintaining the vacuum at 3 to 5 x 10<sup>-4</sup> mm Hg col. Furthermore, a method was developed for measuring the angles of "wrinkles" by the type MIS-11 profile meter and an evaluation was made of some of the data on a method of measurement and the shape of the wrinkles which form during vacuum etching. For soft carbon steel and two alloy steels (with 1% Cr and with 1% Cr + 1% Ni), the relative value  $\sigma_{hr} = 0.6$  to 0.75  $\sigma_v$ , which corresponds to an average value of the wrinkle angles of  $\theta = 136$  to 145°. By means of the modified drop method, the absolute surface tension on the free austenite surface was determined, using spectrally pure lead as a standard material. The

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experiments were carried out in a carefully purified atmosphere of argon and unsaturated lead vapours at 900°C for a duration of 4 hours. On the basis of the equilibrium of the surface tension vectors in the horizontal and vertical directions, the surface tension was determined under the above given conditions for two types of steel; for the soft carbon steel  $\sigma_v = 1240$  dyn/cm and for the 30ChN2MA steel  $\sigma_v = 1300$  dyn/cm. Furthermore, an analysis was made of the shape of the lead drops as determined in the transverse cross-section on the surface of the specimen during measurement of the  $\sigma_v$  values. Finally, the absolute surface tension at the grain boundaries on eliminating the influence of unsaturated lead vapours was tentatively calculated. The surface tension at the austenite grain boundaries at 1100°C was found to be about 800 dyn/cm for soft carbon steels. In evaluating the influence of lead vapours on the wrinkle angles, it was found that this influence is small and in the given case brings about a change of the wrinkle angles from 144.5 to 139°. So far, this quantity

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has not been measured on other alloys investigated but work on this point is continuing. Some of the measurements were carried out by Engineer Kašik, VUHŽ, Prague. There are 19 figures and 28 references: 5 Czech, 1 Soviet, 1 French, 1 German and 20 English. ✓

ASSOCIATION: Výzkumný ústav VŽKG, Ostrava (Research Institute VŽKG, Ostrava)

SUBMITTED: June 17, 1960

Card 5/5

MAZANEC, Karel, inz., kandidat technických ved; KAMENSKA, Emilie, inz.

Examination of the effect of oxygen on surface stress. Hut listy  
16 no.8:561-565 Ag '61.

1. Vyzkumny ustav, vitkovicke zelezarny Klementa Gottwalda.



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E073/E435

AUTHORS: Mazanec, Karel, Engineer and  
Kamenska, Emilie, Candidate of Technical Sciences,  
Engineer

TITLE: Study of the influence of oxygen on surface tension

PERIODICAL: Hutnické listy, 1961, No.8, pp.561-565

TEXT: A number of authors have expressed the view that an increased content of oxygen produced intergranular brittleness in steel. J. Plateau, G. Henry and C. Crussard (Ref. 2: Precipitation Processes in Steels; Iron and Steel Inst. Spec. Rep. No. 64, 1959, pp. 157-176) have pointed out that a relation may exist between intergranular brittleness and segregation of oxygen at the grain boundaries. In this paper, the authors investigate other causes of this brittleness. An attempt is made to determine more accurately the crystallographic relations pertaining to stripes on free surfaces, revealed after high-temperature etching at low pressures. Furthermore, certain views are expressed on the properties of fractures, since similar stripes were observed on fracture surfaces, particularly in cases of braked fractures in martensite when the fracture was

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Study of the influence of ...

mostly along the grain boundaries. Under such conditions, the formation of stripes has not hitherto been observed. J.Bénard, J.Moreau and J.Plateau (Ref.6: Zeitsch. Electrochemie, 61, 1957, pp.59-65) explain the stripe formation by the fact that adsorption of oxygen reduces the surface energy, particularly on some crystallographic planes. This facilitates changes on the surface of the specimen caused by surface diffusion, enabling formation of non-uniformities corresponding to those planes where the surface energy is lowest. A certain analogy can be anticipated between the character of these striped surfaces and certain fracture surfaces which occur during intercrystalline fractures. In the case of grain boundaries, the probable cause of formation of stripes are oxygen atoms which are dissolved in the metal and can be adsorbed at the grain boundaries. The experiments were made on the steel 30ChN2MA produced in a 40 kg high-frequency laboratory furnace in such a way as to obtain an increased oxygen content (0.016%). After forging, the material was homogenized at 1000°C for one week. From this material, specimens were produced for studying the mutual orientations of the stripes and the crystallographic planes. After careful  
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Study of the influence of ...

preparation of the surface of the polished specimens, these were vacuum-etched at 1050°C at a residual pressure of  $3 \times 10^{-3}$  to  $1 \times 10^{-3}$  mm Hg for durations of 2 - 48 hours. Under such conditions, no continuous oxygen layers formed on the specimens and oxygen was only adsorbed at the surface of the material. For comparison, the stripe-formation was also investigated after studying braked fractures. These test specimens were austenized at 1100°C for 1 hour and then water-quenched. After quenching, the specimens were loaded for 1 hour with a static stress of 60 kg/mm<sup>2</sup>, corresponding approximately to 0.35  $\sigma_p$  of the given steel after quenching. The braked fractures occurred after the load has been applied for 30 to 50 minutes. It was found that the stripes on the free surface were parallel to the planes {111} or {100}. The preferential etching of the plane {100} indicates that the adsorbed oxygen reduces the surface tension in this plane much more intensively than in the planes {111} which should have the lowest surface energy, since they have the densest atom population. The striping is attributed to a decrease in the surface energy. The gained energy forms the motive force of surface diffusion on the

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grain boundaries and brings about stripe formation at spots which are suitably oriented. It was found that a close relation exists between stripe-formation on the free surface and on fractures. An explanation is given why stripe formation is difficult to observe on fractures; it was observed for the first time on quenched steel during tests involving braked fractures and on soft carbon steels. J.Plateau et al (Ref.2) were not successful in detecting stripe formation in the Fe-O system by means of optical fractography. A direct relation exists between the adsorbed oxygen, the stripe-formation and the strength properties of the steel. In accordance with the theory of Griffith, a drop in the surface energy in the presence of adsorbed oxygen on the grain boundaries leads to a decrease in the critical size of cracks in intercrystalline fractures, i.e. to easier fracture. There are 11 figures, 1 table and 14 references; 6 Soviet-bloc and 8 non-Soviet-bloc. The references to English language publications read as follows: J.Plateau, G.Henry, C.Crussard: Iron and Steel Inst.Spec.Rep. No.64, 1959, pp.157-176; B.Chalmers, R.King, R.Shuttleworth, Proc. Roy. Soc. A 193 (1948) pp.465-480; C.Andreade, R.F.Y.Randall, Proc. Phys. Soc. B 63, 1950, pp.198-210.  
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Study of the influence of ...

<sup>24115</sup>  
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E073/E435

ASSOCIATION: Výzkumný ústav VŽKG (Research Institute VŽKG)

SUBMITTED: February 16, 1961

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MAZANEC, Karel, inz., kandidat technických ved; KAMENSKA, Emilie, inz.

Contribution to the study of surface tension on austenite grain boundaries. Hut listy 16 no.1:41-49 Ja '61.

1. Vyzkumny ustav, Vitkovicke zelezarny Klementa Gottwalda, Ostrava.

MAZANEK, Karel, inz., kandidat technických ved; KAMENSKA, Emilie, inz.

Contribution to the study of braked fracture formation in the martensite of high strength steel. Hut listy 17 no.3:202-209 Mr '62.

1. Vyzkumny ustav, Vitkovicke zelezarny Klementa Gottwalda.

MAZANEC, K., inzh.; KAMENSKA, E., inzh.

Contribution to the determination of austenite surface tension.  
Sbor VSB Ostrava 8 no.5:535-543 '62.

1. Vyzkumny ústav, Vitkovicke zelezarny Klementa Gottwalda a  
Vysoka skola banska, Ostrava.



L 59218-65 EPI(s)-2/EST(s)/EPP(s)-2/T/EMP(t)/EMP(b)/EMA(c) Pt-7/Pa-b IJP(s)  
JI/AM/JS

ACCESSION NR: AP5015014

UR/0078/65/010/006/1312/1319  
545 834'35-31

AUTHOR: Grizik, A. A. ; Plyushchev, V. Ye. ; Kamenskaya, A. N.

TITLE: Rubidium dizirconate

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 6, 1965, 1312-1319

TOPIC TAGS: rubidium <sup>27</sup>zirconate <sup>27</sup>

L 59238-65

ACCESSION NR: AP5015014

bility, thermal stability, and the reactions of rubidium dizirconate with a series of reagents (methanol, methanol + water, other homologous alcohols). Methanol was found to be the best solvent for  $Rb_2O \cdot 2ZrO_2$ . The physicochemical properties and structure of rubidium dizirconate were determined, and the corresponding x-ray data are tabulated. Orig. art has 5 figures and 4 tables.

ASSOCIATION: None

Card

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2/2

KREYMER, G.S.; TUMANOV, V.I.; KAMENSKAYA, M.S.; ...

Strength limit and rupture mechanism of Ti-6Al-4V ceramic metal  
hard alloys under the effect of compression. Fiz. met. i  
metalloved. 17 no.4:572-577 Ap '64. (MIRA 17:8)

1. Vsesoyuznyy institut tverdykh splavov.

SMIRNOV, F.F.; EYKHMAN, E.F.; KAMENSKAYA, D.S.; BRAKHMAN, L.A.; KISELEV, Ye.N.;  
SEREBROVSKIY, V.B.

Cutting properties of high-strength hard alloys. Stan. Instr. 33  
no.3:27-30 Mr '62. (MIRA 15:2)  
(Metal-cutting tools)

I 23369-65 ENT(a)/EFF(n)-2/EWA(d)/EWP(t)/EWP(k)/EWP(b) Pf-2/Pu-4 MJM/2/JG  
ACQUISITION NR: AR5000710 15/0277/61/006/009/0020/0020

SOURCE: Ref. zh. Mashinostroitel'nyye materialy\*, konstruktii i  
raschet detaley mashin. Gidroprivod. Otd. vyp., Abs. 9.48.122

AUTHOR: Kreymer, G. S.; Smirnov, F. F.; Kamenskaya, D. S.;  
Pykhmans, E. P.

26  
B

1960, 24-37  
TOPIC TAGS: tungsten carbide, carbide tool, cutting tool, tantalum  
containing alloy/ alloy T5K12V, alloy TT7K12

TRANSLATION: Results are reported of a study of the cutting  
properties of hard alloys TT7K12 (tungsten carbide 81%, tantalum  
carbide 3%, titanium carbide 4%, and cobalt 12%) and T5K12V (tungsten  
carbide 83%, titanium carbide 5%, and cobalt 12%). Both alloys have  
identical physical and mechanical properties (sigma<sub>b</sub> bond= 170-180

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1. 23389-65

ACCESSION NR: AR5000710

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kg/mm<sup>2</sup>, HRA 87-88). In laboratory tests, a determination was made of the dependence of change in stability on cutting speed for different cutting cross sections under industrial conditions - the alloys were tested in different machining operations, and were compared with

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ACCESSION NR: AP4034055

8/0126/64/017/004/0572/0577

AUTHORS: Kreymer, G. S.; Tumanov, V. I.; Kamenskaya, D. S.; Pavlova, Z. I.

TITLE: On the resistance limit and the mechanism of failure of the metal ceramic solid alloy of WC and Co at compression

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 4, 1964, 572-577

TOPIC TAGS: resistance limit, yield stress, stress analysis, cobalt, carbide phase, dislocation effect, tungsten carbide

ABSTRACT: The purpose of this work was to obtain systematic experimental data on the effects of composition and carbide grain size on the resistance limit of the alloy WC-Co during compression. Five sets of alloys were prepared with varying sizes of carbide grains (1.4, 1.7, 1.9, 3.3, and 5.3  $\mu$ ). In each set specimens were prepared containing varying percentages of cobalt. The different grain sizes were obtained by changing the initial temperature at which the powder was formed. The results showed that (with increasing cobalt content) the resistance limit increased initially and then decreased monotonically; all the curves reached

APPROVED FOR RELEASE: 08/10/2001 CIA-RDP86-00513R000620310001-8  
size of 1.4-1.7  $\mu$  was attained for 5% by wt (8.6% by vol) of cobalt in the alloy.

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ACCESSION NR: AP4034055

The resistance limit is given by the theoretical expression

$$\sigma(S_T) = \frac{A}{\sigma^{1/2}} + B;$$

$$\sigma(S_T) = \frac{C}{\sigma^{1/2}} + D;$$

where  $\sigma$  is the resistance limit,  $S_T$  the yield limit,  $v$  the volumetric content of  $Co$ , and A,B,C,D are constants. The theoretical dependence of the resistance limit on the grain size is given by

$$\sigma_c \cong \frac{a}{d} + B';$$

$$\sigma_c \cong \frac{b}{d^{1/2}} + D'.$$

where  $d$  is the grain size and  $a, b, B', D'$  are constants. The form of the experimental curves agrees with these expressions. Finally, it was shown that these dependences were adequately described by the dislocation theory of E. Orowan (Symposium on Internal Stresses in Metals and Alloys, Inst. Metals, London, 1948) and of F. V. Lenel and G. S. Ansell (Powder Metallurgy. Proc. intern. Conference held in N.J., June 13-17, 1960, p.267). Orig. art. has: 7 formulas, 3 figures, and 1 table.

ASSOCIATION: Vsesoyuznyy institut tverdykh splavov (All Union Institute for  
Card 2/3 Solid Alloys)

ACCESSION NR: AP4034055

SUBMITTED: 15 May 63

ENCL: 00

SUB CODE: MM

NO REF SOV: 006

OTHER: 009

Card 3/3

PETROV, K.M.; DYAKONOV, V.I.; FADEYEV, I.G.; SEMENENKO, P.P.; KRYUKOV, L.G.;  
Prinimali uchastiye: PASTUKHOV, A.I.; SHISHKINA, N.I.;  
PAZDNIKOVA, T.S.; CHIRKOVA, S.N.; KAREL'SKAYA, T.A.;; LOPTEV, A.A.;  
DZEMYAN, S.K.; ISUPOV, V.F.; BELYAKOV, A.I.; GUDOV, V.I.;  
SUKHMAN, L.Ya.; SLESAREV, S.G.; GOLOVANOV, M.M.; GLAGOLENKO, V.V.;  
ISUPOVA, T.A.; ZYABLITSEVA, M.A.; KAMENSKAYA, G.A.; POMUKHIN, M.G.;  
UTKINA, V.A.; MANEVICH, L.G.

Vacuum treatment of alloyed open hearth steel. Stal' 22 no.2:113-  
117 F '62. (MIRA 15:2)

1. Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov  
(for Pastukhov, Shishkina, Pazdnikova, Chirkova, Karel'skaya,  
Loptev, Dzemyan). 2. Metallurgicheskiy kombinat im. A.K. Serova  
(for Isupov, Belyakov, Gudov, Sukhman, Slesarev, Golovanov,  
Glagolenko, Isupova, Zyablitseva, Kamenskaya). 3. 6-y Gosudar-  
stvennyy podshipnikovyy zavod (for Pomukhin, Utkina, Manevich).  
(Steel—Metallurgy)  
(Vacuum metallurgy)

KAMENSKAYA, G.V., inzh.

Small device for lighting stages. Svetotekhnika 7 no.3:25-26  
Nr '61. (MIRA 14:8)

1. Eksperimental'naya stsenicheskaya laboratoriya Moskovskogo  
khudozhestvennogo akademicheskogo teatra SSSR imeni Gor'kogo.  
(Stage lighting)

ZYAZEV, V.; KAMENSKAYA, A.; MALYSHEV, A.; SHUSTOV, A.

Using the system of closed circuits in organizing interurban freight  
haulage. Avt.transp. 38 no.9:11-14 S '60. (MIRA 13:9)  
(Transportation, Automotive)

KAMENSKAYA, A.I.

809/2172

FRASE I BOOK EXPLOITATION

3(5)

Atskamiya knazh SSSR. Membravot'myevaya postoyannaya komissiya po zhalazhnyyem metalurgicheskim resursam Altaya-Sayan'nykh gor'nykh okruzhnosti, tom 1, knizhka 1. Knizhka 1 (Geology). Moscow, 1958. 340 p. (Soviet Geological Institute, Moscow). 2,500 copies printed.

Additional Sponsoring Agencies: Akademiya nauk SSSR, Sibirskoye otdeleniye, USSR. Gosstatizvuchayemyy planovyya komissiya. Glavnyy upravleniye nakhono-issledovatel'skikh i proyektnykh organizatsiy, Institut Otkrytiya, USSR. Ministerstvo geologii i obratnoy maly, USSR. Zepedno-Sibirskoye geologicheskoye upravleniye, SSSR. Vnesoyarskoye geologicheskoye upravleniye, Sibirskiy geokhimicheskiy institut, Yuzhnyy nakhono-issledovatel'skiy geologicheskiy institut.

Ms. of the vol.: P. Ye. Sledovskiy, and G.A. Bolshoy; Resp. Ed. of Series: I.F. Kuznetsov, Academician; Editor: I.F. Kuznetsov, Academician, I.F. Gerasimov, Academician, N.A. Pavlov, Academician, I.F. Kuznetsov, Academician, G. Popov, Academician, P. Ye. Sledovskiy, Academician, V.S. Kuznetsov, Academician, I.A. Chukhalov, Academician, S.S. Smolodin, Academician, V.S. Kuznetsov, Academician, I.A. Chukhalov, Academician, I.S. Nazarov, Academician. M. of Publishing House: I.G. Kuznetsov, Tech. Ed.: I.F. Kuznetsov.

Keywords: This book is intended for structural, exploration and mining geologists, for geophysicists and mineralogists, and industrial planners.

Comments: This work purports to be the first attempt to review and summarize all the material that has been published on the iron-ore deposits of the Altay-Sayan'nykh oblast' during the last 20 years. This area, the work reports is fast becoming one of the most important iron-ore bases in the Soviet Union. The book discusses the economic aspects of the geology and geology of the individual deposits, presents a qualitative and quantitative (as of January 1, 1977) analysis of ore reserves, and evaluates the prospects and possibilities of further development of the Altay-Sayan'nykh iron-ore base. The geologic information on the geology and mineralization of the area are described. Extensive information on the geology and mineralization of the area is given in the Altay-Sayan'nykh region is given. There is a historical account of the exploration and development of the region, and of the development of concepts on the geology and mineralization in the area. The following scientists participated in the preparation and writing of this volume: G.L. Popov, S.S. Likhin, M.K. Kabanov, V.M. Klyuchevskiy, O.G. Kisev, and V.A. Valchukov of the West Siberian branch of the AN SSSR, I.S. Shumov of the Permanent Interdepartmental Committee on Iron, A.S. Falyagin, A.S. Malinin, M.A. Gerdik, Yu. A. Spivak, M.I. Solov'yev, V.S. Belykh, G.P. Bykov, E.I. Klybov, and K.G. Salovitch of the West Siberian Geological Administration, V.I. Medvedev, A.S. Aladyshkin and P. Ye. Yan of the Krasnoyarsk Geological Administration, M.G. Radakov, E.A. Yedutis, Yu. V. Bombardirovskiy, G. Ye. Savitskiy, and A.D. Prodanovskiy of the 59th Siberian Geological Survey, Chervinskoye trust, P.A. Lyubov, T.I. Labadov, T.I. Kuznetsov, A.L. Makhomirov and B. P. P. of the Siberian Geophysical Trust, A.I. Gidlovskiy, A.S. Mitropolskiy of the Mining Expedition, V.A. Iglin of the Mining Administration of the Kuznetsk Metallurgical Combine, S.D. Gidlovskiy, V.G. Kozlov, V.I. Pavlov, V.I. Pavlov of the Siberian Metallurgical Trust, and V.G. Kozlov of the Siberian Metallurgical Trust. There are 103 diagrams including inset maps and 10 tables. There are 271 references, all Soviet.

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Iron Ore Deposits (Cont.) 897/2172

Material composition characteristics of the development of the magnetite  
of the Alibey-Geyranlykya district and their relationship to endogenous  
iron-ore formation 206

Structural regularities in the distribution of main iron-ore regions 201

General structural characteristics of the Alibey-Geyranlykya district 201

Structural characteristics of structural placement of iron-ore regions 201

Structural characteristics of iron-ore complexes and zones 200

Post-ore fissure tectonics and its effect on mining operations (S.S. Lugin) 201

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metamorphic Iron-Ore Manifestations of the Alibey-Geyranlykya Mountains  
in the Alibey-Geyranlykya District (N. Zh. Galina) 201

Genetic classification of sedimentary iron ores 201

Brief description of iron-ore manifestations 201

Stratigraphic grouping of ore manifestations and times of iron-ore  
deposition 200

Space distribution of iron-ore depositions of different genetic types 200

General industrial and possibilities evaluation of sedimentary-  
metamorphic ore manifestations 207

Ch. 6. General Characteristics of the Mesozoic Iron-Ores in Gornaya  
Sherdy, Kuznetskiy Alatau and Salsar (P.A. Syzhenko, T.I. Lashin,  
I. Ya. Kozlovskaya, A.I. Mal'kumbar, A.S. Shubin) 206

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AVAILABLE: Library of Congress

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D040/D113

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1.4000

AUTHORS: Smirnov, F.F.; Eykhmans, E.F.; Kamenskaya, D.S.; Brakhman, L.A.;  
Kiselev, Ye.N.; Serebrovskiy, V.B.

TITLE: The cutting properties of carbides of increased strength

PERIODICAL: Stanki i instrument, no. 3, 1962, 27-30

TEXT: Three new cutting alloys, developed by the Vsesoyuznyy nauchno-issledovatel'skiy institut tverdykh splavov (All-Union Scientific Research Institute of Hard Alloys) (VNIITS) for use when the cutting tools of standard carbides break down because of crumbling, are described. The composition of ~~TT7K12~~ (TT7K12), ~~T5K12~~ (T5K12V) and ~~TT7K15~~ (TT7K15) alloys, selected from many compositions after tests at VNIITS, NIITAvtoprom, TsNIITMASH and Uralmashzavod, is as follows (Table 1):

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The cutting properties .....

Alloy	Specific weight, g/cm <sup>3</sup>	Hardness, RA	Chemical composition (%)			
			Titanium carbide	Tantalum carbide	Tungsten carbide	Cobalt
TT7K12	13.1	87-88	4	3	81	12
TT7K15	12.7-13.0	87-88	4	3	78	15
T5K12V	12.9-13.0	87-88	5	-	83	12

Cutting tests were conducted at the Uralmashzavod, Kolomenskiy teplovozostroitel'nyy zavod (Kolonna Diesel Locomotive Plant), Stankostroitel'nyy zavod im. Ordzhonikidze (Machine Tool Plant im. Ordzhonikidze), LIL, GAZ, Kramatorskiy zavod tyazhelogo mashinostroyeniya (Kramatorsk Heavy Machinery Plant), and the Elektrostal'skiy zavod tyazhelogo mashinostroyeniya (Electrostal' Heavy Machinery Plant). The results show that TT7K15 has the highest strength but only half the durability of TT7K12, and the T5K12V has almost the same cutting properties as

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040/D113

The cutting properties .....

TTK12 but lower wear resistance. Generally, the strength of the new alloys in cutting is considerably higher than that of the standard carbides T5K10 (T5K10), BK8 (VK8) or BK11 (VK11) in cutting with deep cut. They proved good in heavy and intermittent cutting with relatively high cutting speed, and they are initially being used for planing large machine parts at the Kolonna Diesel Locomotive Plant, etc., as well as for planing large steel plates for dies at the Gor'kovskiy avtomobil'nyy zavod (Gor'kiy Automobile Plant). The following conclusions are drawn: (1) TT7K12 and T5K12V alloys are basically used as substitutes for high-speed steel in rough turning, turning on mills, planing, and other machining where the strength of standard carbides is not sufficient for dependable tool performance. In rough turning, they often can replace the T5K10 alloy, and the feed must then be raised 1.5 times or doubled, and the cutting speed slightly reduced. (2) The strength of TT7K12 and T5K12V is mostly sufficient; since the TT7K15 alloy is stronger and has a lower wear resistance, it would be better to use it only in individual cases. (3) The use of the new alloys will have negative results in cases where the T5K10 alloy works without too much crumbling of the cutting edge and where any considerable increase in the cut depth is technically impossible or

cont 3/4

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000/013

The cutting properties .....

inexpedient. (4) The cutting capacity of the TT7KLV and T5KLVV alloys is much higher than that of high-speed steel when the cut is deep, but the difference abruptly diminishes or even disappears in operation with low feed (of about 0.1 mm/rev). More experiments are necessary before it can be seen whether the new alloys ought to be used for shallow cutting. (5) In future, it is necessary to investigate whether the new alloys should be used for cutoff tools and complex-shaped cutters, to determine the effect of cutting tips of the new alloys on tools for materials difficult to cut, and to achieve stable cutting properties for the TT7KLV and T5KLVV alloys. There are 3 tables and 6 figures.

X

Card 4/4

KAMENSKAYA, I. N.

"The Study of Streptococcal O and S of Hemolytic Streptococci  
in Scarlet Fever." Cand Med Sci, Khar'kov State Medical Inst, Khar'kov,  
1953. (RZhBiol, No 1, Sep 54)

SO: Sum 432, 29 Mar 55

KAMENSKAYA, I.N.

RUSSIAN

Species and type specificity of immunity in dysentery. Zhur.  
mikrobiol., epidem. i imman. 27 no.3:22 Mr' 56. (MIRA 9:7)

1. Iz Khar'kovskogo instituta okhrany materinstva i mladenche-  
stva imeni N.K.Krupskoy.  
(DYSENTERY, BACILLARY, immunology.  
species & type specificity in immunity in animals (Rus))

*KAMENSKAYA, I.N.*

USSR/Chemical Technology - Chemical Products and Their  
Application. Treatment of Solid Mineral Fuels

I-7

Abs Jour : *Ref Zhur - Khimiya*, No 1, 1958, 2474

Author : Kamenskaya, I.N., Polozov, V.F.

Inst : All-Union Scientific Research Institute of Shale Processing.

Title : Chemical Composition of Generator Tar of Obshchiy Syrt Shale.

Orig Pub : *Tr. Vses. n.-i. in-ta po pererabotke slantsev*, 1956, No 5, 203-211

Abstract : A study was made of water-free, generator shale tar, deprived of polar and high-molecular compounds, of two of its fractions, boiling range up to 200° and 200-300°, and of the gas gasoline produced by gasification of the shale; the products under study were subjected to

Card 1/2

KOZHEVNIKOV, Aleksandr Vasil'yevich; KAMENSKAYA, I.N., kand.khim.nauk, red.;  
PLATONOV, R.K., kand.khim.nauk, retsenzent; DOLMATOV, P.S.,  
vedushchiy red.; YASHCHURZHINSKAYA, A.B., tekhn.red.

[Heavy liquid fuels for gas turbines] Tiazheloe zhidkoe toplivo  
dlia gazovykh turbin. Leningrad, Gos. nauchno-tekhn.isd-vo نفت.  
i gorno-toplivnoi lit-ry, Leningr. otd-nie, 1958. 136 p.

(MIRA 12:2)

(Liquid fuels)

(Gas turbines)

KAMENSKAYA, I.N.; FEOFILOV, Ye.Ye.

Group composition of producer gasoline. Khim. i tekhn. gor.  
slan. i prod. ikh perer. no.8:237-250 '60. (MIRA 15:2)  
(Gasoline--Analysis)  
(Oil shales)



EPSHTEYN-LITVAK, R.V.; DMITRIYEVA-RAVIKOVICH, Ye.M.; D'YAKOVA, Ye.I.;  
KAMENSKAYA, I.N.; VIL'SHANSKAYA, F.L.; KAMZOLKINA, N.S.

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immun. 32 no.6:18-25 Je '61. (MIRA 15:5)

1. Iz Moskovskogo instituta epidemiologii, mikrobiologii i gigiyeny.  
(DYSENTERY) (IMMUNITY)

EPSHTEYN-LITVAK, R.V.; DMITRIYEVA-RAVIKOVICH, Ye.M.; D'YAKOVA, Ye.I.;  
KAMEISKAYA, I.N.; FIL'SHANSKAYA, F.L.

Ways for improving dysenterial vaccines and calculating their  
effectiveness. Zhur. mikrobiol., epid. i immun. 33 no.1:22-28  
Ja '62. (MIRA 15:3)

1. Iz Moskovskogo instituta epidemiologii i mikrobiologii.  
(DYSENTERY) (VACCINES)

KAMENSKAYA, I. P.

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So: U-3261, 10 April 1953 (Letopis 'Zhurnal 'nykh Stroy, No. 12, 1949).

KAMENSKAYA, L. M.

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no.4:29-32 Ap '60. (MIRA 13:6)

1. Predsedatel' obkoma profsoyusa meditsinskih rabotnikov,  
g.Tula.

(Tula Province--Public health)

KAMENSKAYA, K.G.

Using the solidification properties of snow in constructing  
snow walls. Izv. SO AN SSSR no. 10:105-113 '65  
(MIRA 19:1)

1. Sibirskiy nauchno-issledovatel'skiy institut energetiki,  
Novosibirsk. Submitted October 17, 1964.

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Nepheline treatment with sulfur dioxide. Izv.vys.ucheb.  
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(MIRA 1961)

1. Gornometallurgicheskiy institut Kol'skogo filiala AN SSSR.  
Submitted December 24, 1963.

KAMENSKAYA, L.H.

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(TULA PROVINCE--HEALTH EDUCATION)

KAMENSKAYA, L. P.

"The Practice of Conducting Range-Finder Field Tests and Methods of Mathematical Treatment of the Test Results." Cand Tech Sci, Moscow Inst of Engineers of Geodesy, Aerial Photography, and Cartography, 19 Nov 54. (VI, 9 Nov 54)

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SO: Sum. No. 521, 2 Jun 55



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Calculating the common error of a series of measurements of one  
quantity on the basis of errors of individual groups of measurements.  
Geod.i kart. no.7:31-36 S '56. (MLRA 9:11)

(Errors, Theory of) (Geodesy)



KAMENSKAYA, M. [A.] AND PROPRIETARY INDEX

Alkyl- and aryl-substituted ortho esters of silicic acid.  
 III. Synthesis of allyltrichoxysilicane. K. Andrianov  
 and M. Kamenskaya, *J. Gen. Chem. (U. S. S. R.)* **8**,  
 900-71(1938); cf. *C. A.* **32**, 7802<sup>g</sup>.—The prepn. by the  
 previous method of an alkyltrichoxysilicane with an  
 unsatd. radical in the absence of  $\text{Et}_2\text{O}$  was studied. The  
 condensation of allyl bromide and chloride with  $(\text{EtO})_2\text{Si}$   
 in the presence of Mg gave 56.1 and 60%  $\text{CH}_2=\text{CHCH}_2\text{-}$   
 $\text{Si}(\text{OR})_2$ , resp., b. 172-6°,  $d_4^{20}$  0.8220,  $n_D^{20}$  1.3062, M. R.  
 81.67 (calcd. 82.84) Chas. Blanc

A.S.H.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

KIRZON, M.V.; KAMENSKAYA, M.A.

Sympathetic effect on the skeletal muscle and neuromuscular syn-  
apsis as related to the frequency of tetanic stimulation. Dokl.  
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1. Moskovskiy gosudarstvennyy universitet. Submitted December 31,  
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Anilideformaldehyde resin. K. A. Andrianova, O. I. Gribanov, and M. A. Kamenskaya. U.S.S.R. #4,526, April 30, 1945. A fat acid, or a mixt. of fat acid and vegetable oil, is treated with  $\text{PhNH}_2$ , and the product condensed with  $\text{CH}_2\text{O}$ , or the acid is condensed with  $\text{CH}_2\text{O}$ , and the condensation product treated with  $\text{PhNH}_2$ .

M. Hosh

KAMENSKAYA, M.A.; KIRZON, M.V.

Significance of the summation process for the development of  
carnosine effect on the skeletal muscle in fatigue. Nauch.  
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gosudarstvennogo universiteta im. M.V. Lomonosova.

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147-154 Mr '56. (MLRA 9:7)

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NESTERENKO, A.I.; KAMENSKAYA, M.I.

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149-153 Ap '56. (MLBA 9:8)  
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NESTERENKO, A.I.; KAMENSKAYA, M.I.

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77 no.5:147-155 My '56. (MIRA 9:8)  
(SURGERY,  
bibliogr. (Rus))

*KAMENSKAYA, M.I.*

**ENSTERENKO, A.I.; KAMENSKAYA, M.I.**

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(BIBLIOGRAPHY--SURGERY)

*A. P. K. A. S. M. Y. M. I.*

RUSSIAN, M.I.; KAMSHORAYA, M.I.

~~RUSSIAN, M.I.; KAMSHORAYA, M.I.~~  
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150-153 Ap '57. (M.I. 10:0)  
(BIBLIOGRAPHY--SURGERY)

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NESTERENKO, A.I.; KAMENSKAYA, M.I.

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khir. 79 no.8:149-154 Ag '57. (MIRA 10:10)  
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*KAMENSKAYA, M.I.*

NESTPERENKO, A.I.; KAMENSKAIA, M.I.

Dissertations on surgery and problems in allied fields. Vest. khir.  
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NESTERENKO, A.I.; KAMENSKAYA, M.I.

Dissertations on surgery and related problems defended in 1956-1957.  
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NESTERENKO, A.I.; KAMENSKAYA, M.I.

Dissertations on surgery and related problems presented during  
1957-1958. Vest. khir. 84 no. 2:154-158 contd F '60. (MIRA 14:1)  
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NESTERENKO, A.I., KAMENSKAYA, M.I.

Dissertations on surgery and problems in related specialities  
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NESTERENKO, A.I.; KAMENSKAYA, M.I.

Dissertations on surgery and problems in related specialties  
defended in 1958-1960; second part. Vest.khir. 89 no.7:156-  
158 JI '62. (MIRA 15:8)

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NESTERENKO, A.I.; KAMENSKAYA, M.I.

Dissertations on surgery and allied problems defended from 1958  
through 1960 (conclusion). Vestn. khri. Grekov. 90 no.4:152-158  
Ap'63 (MIRA 17:2)

NESTERENKO, A.I.; KAMENSKAYA, M.I.

Dissertations on surgery and problems in related disciplines defended during 1961-1962, Vest. khir. 93 no.9:148-151 S '64. (MIRA 18:4)

NESTERENKO, A.I.; KAMENSKAYA, M.I.

Dissertations on surgery and on problems of related specialties published in 1961 - 1962. Vest. khir. 93 no.8:142-144 Ag '65.  
(MIRA 18:7)

16(1)

AUTHOR: Kamenskaya, M.M.

06308

SOV/8140-59-6-9/29

TITLE: Solvable Lie Standard Algebras. I

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Matematika, 1959,  
Nr 6, pp 58-71 (USSR)

ABSTRACT: A zero algebra is called complete if its orthogonal complement is its normalizer. According to G.B.Gurevich [Ref 2] a linear Lie algebra is called a Lie standard algebra if its normalizer is identical with the normalizer of a complete zero algebra. In the present paper the author determines the center  $Z_B$ , the commutant  $[B^2]$  and the differentiation algebra  $A_B$  for an arbitrary solvable Lie standard algebra  $B$  being no zero algebra. Under consideration of numerous single cases the results are formulated in three theorems. There are 5 Soviet references.

ASSOCIATION: Kaluzhskiy gosudarstvennyy pedagogicheskiy institut (Kaluga State Pedagogical Institute)

SUBMITTED: June 27, 1958

Card 1/1



SUDAKOV, S.G.; ALEKSANDROV, T.F.; BAGROV, M.A.; BULANOV, A.I.; KAMENSKAYA, M.V.;  
KUZ'MIN, B.S.; LITVINOV, B.A.; SINYAGINA, M.I.; TIMOFEEV, A.A.; ENTIN, I.I.;  
SINYAGINA, V.I.

[Instructions for class I, II, III and IV leveling] Instruktsia po  
nivelirovaniu I, II, III i IV klassov. Moskva, Izd-vo geodesicheskoi  
lit-ry, 1955. 106 p. (MIRA 9:3)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye geodesii i kartografii.  
(Leveling)



SUDAKOV, S.G.; ALEKSANDROV, T.F.; BAGROV, M.A.; BULANOV, A.I.; KAMENSKAYA, M.V.; KUZ'MIN, B.S.; LITVINOV, B.A.; SINYAGINA, M.I.; TIMOFEYEV, A.A.; ENTIN, I.I.. Primala uchastiye SINYAGINA, V.I.. ROMANOVA, V.V., tekhn.red.

[Instructions for first-, second-, third-, and fourth-order leveling]  
Instruktsiia po nivelirovaniu I, II, III i IV klassov. Izd.3, ispr.  
i dop. Moskva, Izd-vo geod.lit-ry, 1959. 111 p. (MIRA 13:3)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye geodezii i karto-  
grafii.

(Leveling--Handbooks, manuals, etc.)

SUDAKOV, S.G.; ALEKSANDROV, T.F.; BAGROV, M.A.; BULANOV, A.I.;  
KAMENSKAYA, M.V.; KUZ'MIN, B.S.; LITVINOV, B.A.; SINYAGINA,  
M.I.; TIMOFEYEV, A.A.; ENTIN, I.I. Primal uchastiye  
SINYAGINA, V.I.; KOMAR'KOVA, L.M., red.izd-va; ROMANOVA,  
V.V., tekhn. red.

[Instructions for 1st, 2d, 3d, and 4th-class leveling] In-  
struktsiya po nivelirovaniu I, II, III, i IV klassov. 4 izd.  
dop. i ispr. Moskva, Gosgeoltekhizdat, 1963. 110 p.

(MIRA 16:6)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye geodezii i  
kartografii.

(Leveling)

RAKITSKAYA, N. S.

Aorta

Morphology of the endothelium of thoracic  
aorta in man  
Dokl. AN SSSR 83 no. 5, April 1952  
Voenno-Meditsinskaya Akademiya, im. S. M. Kirova  
red. 14 Nov. 1952

SO: Monthly List of Russian Accessions, Library of Congress, August 1952<sup>2</sup> Uncl.

KAMENSKAYA, N.L.

Morphology of the aortal endothelium in children. Dokl.AN SSSR 93 no.3:535-  
538 N '53. (MLRA 6:11)

1. Voenno-meditsinskaya akademiya im.S.M.Kirova. Predstavleno akademikom  
N.N.Anichkovym. (Endothelium) (Aorta)

KAMENSKAYA, N.L.

USSR/ Medicine - Histology

Card 1/1 Pub. 22 - 42/49

Authors : Kamenskaya, N. L.

Title : Certain characteristics of the wall structure of kidney arteries and veins

Periodical : Dok. AN SSSR 100/5, 1001-1004, Feb 11, 1955

Abstract : Histological data are presented regarding the wall structure of human and animal kidney arteries and veins. Seven references: 3 USSR and 4 German (1871-1950). Drawings.

Institution : The S. M. Kirov Military-Medical Academy

Presented by: Academician N. N. Anichkov, November 16, 1954

*Handwritten:* N. L. Kamenskaya

**KAMENSKAYA, N. L.**

Structure of the Endothelial structure of the renal arteries and veins. Dokl. AN SSSR 103 no.3:495-498 J1'55. (MLRA 8:11)

1. Voenno-meditsinskaya akademiya im. S.M.Kirova. Predstavleno akademikom Ye.N.Pavlovskim  
(KIDNEYS, BLOOD SUPPLY,  
arterial & venous endothelium, structure)



KAMENSKAYA, N.I.

Endothelium of the embryonic aorta in humans. Dokl. AN SSSR  
110 no.6:1096-1099 0 '56. (MLBA 10:2)

1. Voenno-meditsinskaya akademiya imeni S.M. Kirova.  
Predstavleno akademikom Ye.N. Pavlovskim.  
(ENDOTHELIUM) (EMBRYOLOGY, HUMAN)

KAMENSKAYA, N.L., (Leningrad, V.O., 10 liniya, d.15-b, kv.18)

Data on histogenesis of the human aorta. Arkh. anat. gist. i embr.  
36 no.4:61-66 Ap '59. (MIRA 12:7)

1. Laboratoriya eksperimental'noy morfologii (zav. - deystv. chlen  
AMN SSSR prof. N. G. Khlopin) Instituta onkologii AMN SSSR.  
(AORTA, embryol.  
histogenesis (Rus))

KAMENSKAYA, N.L. (Leningrad, V.O., 10-ya liniya, 15b, kv.18); NIKIFOROVA,  
Ye.N.

Endothelium of the dilated and contracted aorta. Arkh. anat. gist.  
i embr. 38 no. 5:76-80 My '60. (MIRA 14:2)

1. Laboratoriya eksperimental'noy morfologii (zav. - deystvitel'nyy  
chlen AMN SSSR prof. N.G. Khlop'in) Instituta onkologii AMN SSSR.  
(AORTA)

KHLOPIN, N.G. [deceased]; KAMENSKAYA, N.L.

Morphology of the vessels of skin hemangiomas in children in connection with the problem of the tissue nature of vascular epithelium. Arkh.anat., gist i embr. 43 no.7:68-74 J1 '62. (MIRA 15:9)

1. Laboratoriya eksperimental'noy morfologii (zav. - deystvitel'nyy chlen AMN SSSR N.G.Khlopin [deceased]) Instituta onkologii AMN SSSR.  
(SKIN--TUMORS) (ANGIOMA) (EPITHELIUM)

BERLIN, L.B.; KAMENSKAYA, N.L.

Histologic changes in chicken epidermis in reparative regeneration.  
Dokl. AN SSSR 149 no.2:428-430 Mr '63. (MIRA 16:3)

1. Voenno-meditsinskaya akademiya im. S.M.Kirova. Predstavleno  
akademikom N.N.Anichkovym.  
(Epidermis) (Regeneration (Biology))

ZELIKIN, M.B., kand. tekhn. nauk; VISHNEVSKIY, A.N., kand. tekhn. nauk;  
Prinimali uchastiye: PANFILOVA, M.L., mladshiy nauchnyy sotrudnik;  
SYTNIK, L.V., mladshiy nauchnyy sotrudnik; KAMENSKAYA, N.P., mlad-  
shiy nauchnyy sotrudnik; MAYSTRENKO, G.S., mladshiy nauchnyy so-  
trudnik

Preparation of silica white using liquors from the soda manufacture.  
[Trudy] NIOKHIM 15:3-11 '63. (MIRA 18:2)

ZELIKIN, M.B., kand. tekhn. nauk; SYTNIK, L.V.; KAMENSKAYA, N.P.

Preparation of silica white by the action of hydrogen chloride on a sodium silicate solution. Report No.1. [Trudy] NIOKHIM 15: 12-18 '63.

Determination of the specific surface of silica white based on the adsorption of a dye. Ibid.:97-100

(MIRA 18:2)

14-57-7-14642

Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 7,  
pp 59-60 (USSR)

AUTHORS: Shvets, M. Ye., Kamenskaya, O. A.

TITLE: A Method for Determining the Lower Border Altitude of  
Intramass Stratified Clouds (O metode opredeleniya  
vysoty nizhney granitsy vnutrimassovykh sloistyxh  
oblakov)

PERIODICAL: Tr. Leningr. gidrometeorol. in-ta, 1956, Nrs 5-6,  
pp 201-207

ABSTRACT: The authors examine the position of the condensation  
level in light of the proposition that heat and moisture  
transfer is brought about not only by vertical move-  
ment but also by turbulent exchange. Using the  
equations for water vapor transfer and for heat ab-  
sorption by dry air, they derived an equation for the  
transfer of humidity deficiency. The equation for

Card 1/3



14-57-7-14642

## A Method for Determining the Lower Border (Cont.)

the altitude of condensation level is first derived, with the element of turbulent exchange left out of the calculations; it is noted that, under this condition, the equation gives low altitude values, because turbulent exchange equalizes the moisture deficiency and raises the altitude at which the deficiency becomes zero. The authors also derive an equation for the altitude of condensation level, taking the turbulent exchange into account. The results of their calculations are represented graphically. The altitude of condensation level is determined from the amount of relative humidity, the temperature at the earth's surface  $T_0$ , and the magnitude of  $\alpha/D$ , where

$$\alpha = \frac{\gamma - g/R}{L/AR_w T - 1} + \gamma_a,$$

Here  $\gamma$  is the vertical temperature gradient,  $\gamma_a$  is the adiabatic gradient,  $g$  is acceleration of gravity,  $R$  and  $R_w$  are constants  
Card 2/3

A Method for Determining the Lower Border (Cont.)

14-57-7-14642

for air and water vapor, A is the thermal equivalent of the work, T is temperature at the condensation level, and D is the coefficient of turbulent exchange. When the value of  $T_0$  is constant, the altitude H of condensation level is determined by the equation

$$H/(1-r) = f (\alpha/D).$$

The condensation level rises as the value of  $T_0$  increases, and falls as the temperature gradient increases.

Card 3/3

A. B.

AMINOVA, R.Kh., kand. ist. nauk; TETENEVA, L.G., kand. ist. nauk;  
ALIMOV, I.A.; DMITRIYEV, G.L.; DZHAMALOV, O.B., doktor  
ekon. nauk, redaktor; DZHURAYEVA, T., kand. ist. nauk,  
red.; ATFENYUK, S.Ya., red.; DANILOV, V.P., glav. red.;  
BELOV, G.A., red.; GRIGOR'YAN, L.L., red.; IBRAGIMOV, Z.I.,  
red.; IVNITSKIY, N.A., red.; IL'YASOV, S.I., red.; KAKABAYEV,  
S.D., red.; KAMENSKAYA, N.V., red.; KRAYEV, M.A., red.;  
KULIYEV, O.R., red.; MAKHARADZE, N.B., red.; OBICHKIN, G.D.,  
red.; PLESHAKOV, S.T., red.; RADZHABOV, Z.I., red.; SELEZNEV,  
M.S., red.; TURSUNBAYEV, A.B., red.; FEDOROV, A.G., red.;  
SHEPELEVA, T.V., red.; PATLAKH, B., red.; MASHARIPOVA, D.,  
red.; BULATOVA, R., red.; GOR'KOVAYA, Z.P., tekhn. red.;  
KARABAYEVA, Kh.U., tekhn. red.

[Socialist reorganization of agriculture in Uzbekistan]  
Sotsialisticheskoe pereustroistvo sel'skogo khoziaistva v Uz-  
bekistane, 1917-1926 gg. Pod red. O.B.Dzhamalova. Tashkent,  
Izd-vo Akad. nauk UzSSR. Vol.1. 1962. 792 p. (MIRA 16:5)

1. Akademiya nauk Uzbekskoy SSR, Tashkent. Institut istorii i  
arkheologii.

(Uzbekistan--Agriculture)

S/138/60/000/011/005/010  
A051/A029

AUTHORS: Eytinton, I. I., Karmin, B. K., Zhakova, V. G., Betts, G. E.,  
Kamenskaya, S. A.

TITLE: Mastication of Natural Rubber in the Presence of Para-  
Tertiary Butylphenolmercaptane, Dimethylphenylparacresolmer-  
captane, Their Zinc Salts and Disulfides

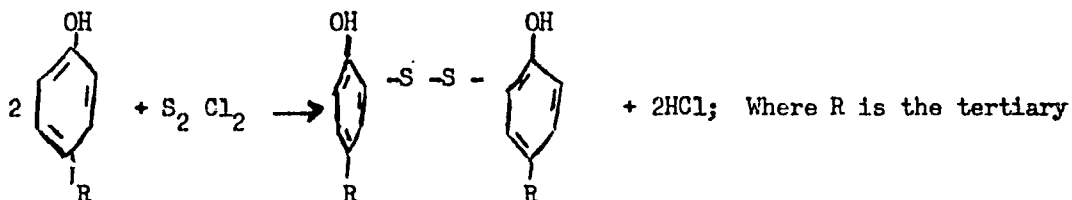
PERIODICAL: Kauchuk i rezina, 1960, No. 11, pp. 21-24

TEXT: The results are given of work carried out on the synthesis and study of paratertiary butylphenolmercaptane, dimethylphenylparacresolmercaptane, their zinc salts and disulfides, as accelerators of natural rubber mastication. The method for producing the listed accelerators is outlined and a characteristic evaluation of these is given. Corresponding disulfides were used as the initial products for producing substituted arylmercaptanes. Both products under investigation were obtained by reacting sulfur monochloride with paratertiary butylphenol and dimethylphenylparacresol. The reaction is given as:

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butyl- or dimethylbenzyl. The reaction was carried out in a solution of dichloroethane at its boiling point. Sulfur monochloride was added gradually, mixing for 2 hours. At the end of the reaction the dichloroethane was distilled off and the product obtained dried in a vacuum at a temperature of 40-50°C until a constant weight was achieved. The disulfide yields were 82 and 87% of the theoretical, respectively. The obtained products, which were resin-like substances, were subjected to an elementary analysis. The results were: for

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clmercaptane, Dimethylphenylparacresolmercaptane, Their Zinc Salts and  
Disulfides

	C	H	S
$C_{20}H_{26}O_2S_2$			
calculated.....	66.26	7.23	17.68
found	66.67	7.36	17.02
$C_{30}H_{30}O_2S_2$			
calculated.....	74.07	6.17	13.16
found	74.40	5.99	12.81

The results showed that the synthesized substances correspond to disulfide of parateritary butylphenol and disulfide dimethylphenylparacresol. In order to obtain corresponding mercaptanes from the disulfides the reduction method was used with glucose and alkali hydroxide in an alcohol-aqueous medium (Ref. 3). Results of an analysis of the zinc content in the zinc salt of the corresponding mercaptane proved that sodium mercaptide and not phenolate is formed when reducing the disulfides with glucose and a calculated quantity of alkali hydroxide. The mercaptane yield was 90 and

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97% of the theoretical, respectively. Zinc salts of the paratertiary butylphenolmercaptane and dimethylphenylparacresolmercaptane were obtained from the respective sodium mercaptides formed in the process of the disulfide reduction. The yield of the commercial product was 96% of the theoretical. The zinc content for the  $C_{20}H_{26}O_2S_2Zn$  was calculated to be 15.2% and found experimentally as 14.7%. The authors point out that they were first to obtain the mercaptanes of the paratertiary butylphenol and dimethylphenylparacresol, their zinc salts and also dimethylphenylparacresol disulfide. A study was carried out of the action of the paratertiary butylphenolmercaptane, dimethylphenylparacresolmercaptane and their derivatives on the mastication of natural rubber. Fig. 1 shows the effect of various doses of mastication accelerators on natural rubber processing on rollers, and Fig. 2 the kinetics of mastication at 100°C. Data on the effect of temperature on the mastication on rollers are given in Fig. 3. The tested substances form the following decreasing series according to

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A051/A029

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their effectiveness on the mastication process: paratertiary butylphenolmercaptane, dimethylphenylparacresolmercaptane > zinc salts > disulfides. The greater activity of the mercaptane as compared to the zinc salts, etc., corresponds with data obtained previously by the authors in studying trichlorothiophenol, pentachlorothiophenol, orthobenzamide thiophenol and their derivatives (Ref. 1,2). It was further found that the mastication of natural rubber in the presence of paratertiary butylphenolmercaptane, dimethylphenylparacresolmercaptane, their zinc salts and disulfides is hardly effective on the tendency of the breaker mixtures to scorching, or on the vulcanization rate and physico-mechanical properties of their vulcanizates. The authors state in conclusion that for industrial application only the zinc salts of mercaptanes are of interest, since mercaptanes are toxic and easily decompose when stored, and the disulfides have a resin-like consistency. There are 3 sets of graphs, 1 table and 3 references: 2 Soviet and 1 German.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry)

Card 5/5



ACCESSION NR: AP4045700

S/0138/64/000/009/0025/0027

AUTHOR: Eytlingon, I. I.; Borodushkina, Kh. N.; Kamenskaya, S. A.; Tikhacheva, Ye. P.

TITLE: Possible use of dimethylaminomethyl phthalimide as a secondary accelerator of vulcanization

SOURCE: Kauchuk i rezina, no. 9, 1964, 25-27

TOPIC TAGS: vulcanization, accelerator, dimethylaminomethyl phthalimide, diphenylguanidine, phthalic anhydride, N-nitrosodiphenyl amine, cushion rubber, tread rubber, tire manufacture, vulcanization accelerator / Altax, Captax, Santocure

ABSTRACT: Dimethylaminomethylphthalimide (AMP, b.p. 76-77C) was synthesized by the reaction of phthalimide with formalin and dimethylamine, after which it was combined with Captax, Altax and Santocure and tested in mixtures based on natural and butadiene-styrene rubbers. The tabulated data for unfilled mixtures of natural rubber containing AMP and Altax are compared with the data obtained for analogous mixtures with Altax and diphenylguanidine (DPG). It was found that AMP is a secondary accelerator of vulcanization of rubber mixtures, although with a lower activity than that of DPG. The necessary increase in AMP content results in a much smaller tendency to pre-vulcanization. Vulcanized rubbers containing di-

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methylaminomethylphthalimide have characteristics (tensile strength, elongation, hardness, aging) equivalent to those of vulcanized rubbers containing diphenylguanidine except for the modulus of elasticity, which is somewhat higher. For some mixtures, AMP can completely replace diphenylguanidine and phthalic anhydride or N-nitrosodiphenyl amine. The experimental data for natural cushion rubbers (with 25 parts by weight of furnace gas black and 15 parts by wt. of channel black for 100 parts of rubber) and for tread rubbers (containing 50 parts by wt. of KHA<sup>2</sup> furnace black for 100 parts by wt. of rubber) based on butadiene-styrene with different amounts of components (Altax, Santocure and AMP) are tabulated and compared. The variation in properties depending on the amount of accelerators is discussed. "T. Gendler took part in the experimental work." Orig. art. has: 4 tables and 1 structural formula.

ASSOCIATION: Nauchno-Issledovatel'skiy Institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry); Dnepropetrovskiy shinnyy zavod (Dnepropetrovsk Tire Plant)

SUBMITTED: 00

ENCL: 00

SUB CODE: 00, MT

NO REF SOV: 000

OTHER: 002

Card 2/2

EYTINGON, I.I.; FEL'DSHTEYN, M.S.; LEVITIN, I.A.; KAMENSKAYA, S.A.

Investigating some phthalimide derivatives as preventers of premature vulcanization of rubber compounds. Kauch. i rez. 22 no.11:20-23 N '63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i Moskovskiy shinnyy zavod.

EYTINGON, I.I.; BORODUSHKINA, Kh.N.; KAMENSKAYA, S.A.; TIKHACHEVA, Ye.P.

Possibility of using dimethylaminomethyl phthalimide as a  
secondary accelerator of vulcanization. Kauch. i rez. 23 no.9:  
25-27 S '64. (MIRA 17:11)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i  
Dnepropetrovskiy shinnyy zavod.