"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIN, N.B.; BERKOVICH, I.I.; LANKOV, A.A.

Device for studying friction surfaces. Zav. lab. 30 no.8:1020 '64. (MIRA 18:3)

1. Kalininskiy torfyanoy institut.

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DEMKIN, N.N.

Efficient innovators. Za indus.Riaz. no.2:58 D '61. (MIRA 16:10)

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DEMKIN, N. V.

PHASE I BOOK EXPLOITATION SOV/6217

Kragel'skiy, Igor' Viktorovich, Doctor of Technical Sciences, Professor

Treniye i iznos (Friction and Wear). Moscow, Mashgiz, 1962. 382 p. Errata slip inserted. 11,000 copies printed.

Reviewer: D. N. Garkunov, Candidate of Technical Sciences; Ed.: V. I. Kumanin, Engineer; Ed. of Publishing House: V. V. Bystritskaya; Tech. Eds.: A. Ya. Tikhanov and T. F. Sokolova; Managing Ed. for Literature on General Engineering: A. P. Kozlov, Engineer.

PURPOSE: This book is intended for scientific workers and engineers engaged in the development of friction and antifriction materials and for designers and specialists in the operation and repair of machines.

COVERAGE: The book deals with the analysis of various types of friction and wear and with calculations relating to certain processes characterizing them. Methods of testing for friction and wear are

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reviewed, and basic data on friction and antifriction materials discussed. The author acknowledges the assistance and cooperation of: V. A. Kudinov; G. I. Troyanovskaya, Candidate of Technical Sciences, who participated in writing Ch. III and Ch. X; N. B. Demkin, Candidate of Technical Sciences, who participated in writing Ch. II; Yu. I. Kosterin, Candidate of Technical Sciences, who participated in writing Ch. VII; and V. A. Kudinov, Candidate of Technical Sciences, who wrote Ch. IX. Each chapter is accompanied by references, mostly Soviet.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/191/60/000/001/006/015
B016/B054

AUTHORS: Demkin, V. M., Ivanov, P. S.

TITLE: New Continuous Production Method of Phenol Formaldehyde Resins

PERIODICAL: Plasticheskiye massy, 1960, No. 1, pp. 29-30

TEXT: The authors report on their continuous production method of phenol formaldehyde resins which, within the Seven-year Plan, is to contribute to an increase in the production of these resins by the 3.5-fold. They enumerate the shortcomings of hitherto usual procedures, and state that continuous methods applicable on a large industrial scale have not been published either inland or abroad (Refs. 1-14). The authors' method provides for: a) a dosing of the preliminary material by methods usual in the chemical industry; b) a multiple-section apparatus for phenol formaldehyde polycondensation by the principle of ideal mixing. Theoretical and calculation problems of such apparatus were discussed in earlier papers (Refs. 15-21). In spite of operating by the principle of ideal mixing, the authors' procedure of polycondensation guarantees a faster

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New Continuous Production Method of Phenol Formaldehyde Resins

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B016/B054

reaction course than the periodic method. The authors' apparatus may be constructed as a block of successive reaction vessels, or (preferably) as a column with sectional mixers on a common shaft. When reorganizing plants with hitherto periodic procedure, the apparatus can be conveniently converted for the continuous procedure. The resin is dried in a thin layer by fast revolving within a few minutes. The drier used by the authors has good thermodynamic characteristics and no moving parts. The molten resin is cooled on both sides on the surface of a rotary drum. The authors' procedure is suited both for dry novolak resins and for liquid resol resins. In the latter case, the procedure is much simplified. The method mentioned was introduced and tested in a large industrial testing apparatus (capacity 1000 t/year). No modifications of the production method have become necessary. The material balance was not different from that of the periodic procedure. The authors found the following advantages over the periodic procedure: 1) The resin yield per unit volume of the reaction apparatus increases by the 4-5 fold. 2) Full automation of the production process was rendered possible. 3) The steadiness of quality of the finished product was ensured. 4) The final content of free phenol was reduced to

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New Continuous Production Method of Phenol Formaldehyde Resins

S/191/60/000/001/006/015
B016/B054

3-4% by good evaporation. 5) Energy consumption was reduced. These advantages made it possible to reduce the cost of production, to increase the working capacity, to improve the sanitary and hygienic conditions, and to reduce the operation area. All new plants of this branch in the USSR were designed on the basis of the authors' procedure. The first fully automatic apparatus were put into operation in 1960. There are 1 figure and 21 references: 6 Soviet, 5 US, 1 British, 8 German, and 1 French.

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DEMKIN, V.M.; IVANOV, P.S.; LEVIN, A.N.

Continuous process for the production of novolak phenol-formaldehyde resins. Plast.massy no.4:14-20 '64. (MIRA 17:4)

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L 7023-66 EWT(m)/EWP(j) RM

ACC NR: AP5026838 SOURCE CODE: UR/0286/65/000/017/0133/0134

AUTHOR: Ivanov, P. S.; Demkin, V. M.

ORG: none

TITLE: A method for producing phenolformaldehyde resins. Class 39, No. 129316

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 133-134

TOPIC TAGS: polycondensation, phenolformaldehyde, resin

ABSTRACT: This Author's Certificate introduces a method for producing phenolformaldehyde resins based on polycondensation of phenol and formaldehyde. Consumption of phenol raw material is reduced by separating out the superresionous water from the resin produced by polycondensation and removing the volatile products according to the method described in Author's Certificate No. 129331. The distillate remaining when the volatile products have been removed is then returned to polycondensation.

SUB CODE: MT/ SUBM DATE: 28Mar59/ ORIG REF: 000/ OTH REF: 000

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIN, Yu.A., inzh.

Repeated use of jack bars in the building of cast-in-situ reinforced concrete structures. Prom. stroi. 42 no.4:46-47 '65. (MIRA 18:4)

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/032/60/026/009/004/018
B015/B058

AUTHORS: Maslenkov, S. B., Demkin, Yu. I.

TITLE: Methods of the Metallographic Investigation of Molybdenum

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol. 26, No. 9, p. 1093 (MIRA 13:9)

TEXT: A new method of visibilizing the molybdenum structure is described. After having been mechanically polished, the metal surface is electrolytically polished in an electrolyte with 95 ml H_2SO_4 + 5 ml methanol at 14 v. The sample is then rinsed in water and etched in a solution of the following composition: 10 g KOH, 10 g $K_3Fe(CN)_6$, 100 ml H_2O. For cast samples, the etching takes 40-50 sec, and 90 sec for sintered ones. The method produced good results for cast and forged molybdenum samples (Fig. microstructure), as well as for samples produced by powder metallurgy. The time required for visibilizing the structure could be reduced to 5-10 min. There are 1 figure and 2 references: 1 Soviet and 1 US.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

Methods of the Metallographic Investigation of Molybdenum

S/032/60/026/009/004/018
B015/B058

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I. P. Bardina (Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardina)

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DEMKIN, Yu.I.

Single-valued microfractography. Fiz. met. i metalloved. 11 no. 5:814-815 My '61. (MIRA 14:5)

1. Institut kachestvennykh staley TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.
(Metallography) (Photomicrography)

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/126/61/012/002/015/019
E073/E335

AUTHOR: Demkin, Yu.I.

TITLE: Formation of Brittle Transcrystallite Cracks at the Boundaries of Molybdenum Twins and Grains

PERIODICAL: Fizika metallovi metallovedeniye, 1961, Vol. 12, No. 2, pp. 291 - 292

TEXT: Experiments are described which show that transcrystallite cracks in molybdenum form at spots predicted theoretically by A.N. Stroh (Ref. 4 - "Fracture", Cambridge, Mass. Technol. Press; N.Y. J. Wiley and Sons, Inc; London, Chapman and Hall Ltd., 1959, 117). The experiments were carried out on brittle fractures of notched specimens of cast molybdenum, fractured by standard impact bending tests at 200 °C. Prior to fracturing, the specimens were vacuum-annealed for one hour at 1 600 °C. The carbon replicas for electron-microscope investigation were separated electrolytically in a solution containing 9 ml. H_2SO_4 and 100 ml. methylated spirit. Analysis of the microfractographs has

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shown that twinning is caused by a stress wave ahead of the front of the growing crack; this is due to the fact that the formation of a twin boundary should be preceded by accumulation of dislocations in front of the crack and opening-up of the crack behind the twin boundary. Thus, it was experimentally proved that brittle transcrystallite cracks in metal with a body-centred cubic lattice originated at the boundaries of grains and the boundaries of twins. The stress field which brings about the opening-up of cracks is strongly directional. There are 3 figures and 6 non-Soviet references. The four English-language references quoted are: Ref. 1 - N.F. Mott - Proc. Roy. Soc., 1953, A220, 1; Ref. 2 - A.N. Stroh - Proc. Roy. Soc., 1953, A223, 404; 1953, A218, 391; Ref. 3 - A.N. Stroh - Phil, Mag., 1956, 1, 489; Ref. 4 - quoted in text.

ASSOCIATION: Institut kachestvennykh staley TsNIIChM (Institute of High-grade Steels, TsNIIChM)

SUBMITTED; February 20, 1961

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/032/61/027/001/013/037
B017/B054

AUTHORS: Maslenkov, S. B. and Demkin, Yu. I.

TITLE: Investigation of Molybdenum Fractures by Parallel Electron-microscopic and Microscopic Examinations of Film Replica of the Destroyed Surface

PERIODICAL: Zavodskaya laboratoriya, 1961, Vol. 27, No. 1, p. 62

TEXT: Film replica were separated from the fracture by a solution of 25 ml of H_2SO_4 in 175 ml of methyl alcohol. A chrome nickel lamina was used as cathode. Samples were etched for 20-35 sec, and films were separated by increasing the voltage from 2 to 14 volts. Molybdenum fractures showed a transcrystalline character under the light microscope.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii (Central Scientific Research Institute of Ferrous Metallurgy)

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ESTULIN, G.V., doktor tekhn.nauk, prof.; DEMKIN, Yu.I., inzh.

Recrystallization of molybdenum. Metalloved. i term. obr. met. no.7:2-3 Jl '62. (MIRA 15:6)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.
(Molybdenum—Metallography)
(Crystallization)

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B103/B206

18.9100 2808

AUTHOR: Demkin, Yu. I.

TITLE: Electrolytic etching of molybdenum

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 8, 1961, 986 - 991

TEXT: The author elaborated a method for the electrolytic etching of molybdenum which reveals the structure of grain boundaries and the dislocations. He checked his method on specimens of forged cast molybdenum which were annealed for 1 hr at 1600°C in vacuum and at 2000°C in a hydrogen current. H_2SO_4 (5 ml) in methyl alcohol (100 ml) served as etching agent. For a surface of the polished section of 10 - 40 mm^2, the applied voltage of ~1 v corresponds to the moment of appearance of bubbles on the cathode. The proposed duration of etching (45 - 60 sec) depends on the temperature of the reagent, the composition and heat treatment of the specimens and on slight voltage fluctuations in the bath. In order to obtain a polished section of high quality, it must be regularly checked under the microscope every 30 - 40 sec. Etching is continued until the details of the microstructure are sufficiently revealed. The specimen is

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Electrolytic etching of...

then rinsed in cold water and dried with ethanol. A comparison of the grain boundaries revealed by this method with those revealed by common chemical etching showed identical characteristic features of the structures. However, polished sections of molybdenum are oxidized around defects. In such cases the author's method (duration of etching 25 - 30 min) is better suited. On single crystals the correlation of the etching figures with the issue points at dislocations is determined according to the following features: (1) The position of the etch pits corresponds to the theoretical distribution of the dislocations. (2) The local effect of tensions causes the appearance of similar etching figures. (3) After repeated etching following a plastic deformation, new pits develop beside the old ones; they are issue points of the same, but now shifted dislocations. The bottom of the old pits is smoothed after repeated etching. (4) The etching of both halves of a split single crystal reveals identical mirror images at the two splitting faces. (5) When etching is done successively or in layers, neither the form nor the number of etch pits (issue points of the dislocations) change, if the plane of the polished surface does not intersect the dislocation loop or -helicoid. The etching figures connected with such dislocation forms approach each other in

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pairs and their number is finally halved. (6) The form of the etch pits on a specific crystallographic plane corresponds to the theoretical one. Although it is difficult to apply features (1) to (6) when revealing dislocations on polycrystals, the author solved this problem. He broke a molybdenum specimen close to a transcrystallite crack. The tensions connected with the propagation of this crack caused the accumulation of dislocations before the crack. According to the theory of the fracture (Ref. 2), the propagation of the crack was stopped by the plastic deformation outside the crack (for similar data see Ref. 3, single crystals having been selectively etched with LiF). During successive etching, number, distribution and form of the etching figures remained unchanged; they only enlarged. The boundaries between two grains which were brought out of orientation by a small angle, as well as the block boundary, are revealed during etching as a chain of etch pits, corresponding to the issue point of the dislocations. The individual figures of such chains do not differ in form from those described above, but the distance between them at each boundary is more constant than in accumulations originating from tensions. Here, too, the number and distribution of the etching figures remained unchanged during successive etching or etching in layers. If

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the distance between dislocations is $<10^{-3}$, the dislocation pits are not resolved by 600-fold magnifications. In the case of electrolytic etching, however, semi-volume etching of the boundary occurs. On the strength of it, the inclination of the boundary plane in the polished-section plane and the curvature of the former in space may be evaluated. When studying the kinetics of motion of the grain boundaries and subboundaries, electrolytic etching offers some advantage as compared with chemical etching. The former reveals, after 1.5 - 2 min, the microstructure of the grains, which became visible several times during depth etching of metals and alloys. The correlation of the substructure of depth etching with the mosaic-like substructure of the substance was proved in Ref. 4. The etching substructure crumbled during cold deformation. The microstructure distorted by cold hardening is gradually restored during the recovery process. The substructure is abruptly changed by recrystallization. The author observed a considerable coarsening of the substructure of molybdenum depth etching with an increase of the annealing temperature from 1600 to 2000°C. Large mosaic blocks in the range of a single grain are etched in various ways. During electrolytic depth etching of molybdenum polished sections in a concentrated solution (15 ml H_2SO_4 in 100 ml CH_3CH), depth etching

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B103/B206

Electrolytic etching of...

figures are revealed which have the form of regular triangles, equally oriented in the range of a grain. During etching in layers, the number of such figures is changed, but they maintain their orientation. Similar etching figures, connected with the issue of certain crystallographic planes to the surface of the polished section, were found in Al-Cu-Mg alloys, aluminum, and other substances. There are 6 figures and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc. The three most important references to English-language publications read as follows: Ref. 2: N. F. Mott, J. Iron Steel Inst., 183, 3, 233 (1956); Ref. 3: J. J. Gilman, Trans AIME, 209, 449 (1957); Ref. 4: L. Delisle, Revue de Metallurgie, 50, 10, 665; J. of Metals, 660 (1953).

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I. P. Bardina (Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin)

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/659/62/008/000/022/028
I048/I248

AUTHORS: Demkin, Yu.I., and Estulin, G.V.

TITLE: An electron-microscope study of the fracture of molybdenum

SOURCE: Akademiya nauk SSSR. Institut metallurgii, Issledovaniya po zharprochnym splavam. v.8. 1962. 168-172

TEXT: The impact fracture of cast, highly deformed Mo was studied under the electron microscope (magnification x2000 - x8000), using the carbon-replica technique. At room temperature the brittle fracture surface consists of closely adjacent facettes of a size much larger than that of the separate grains; this surface is characterized by a certain amount of plastic deformation associated with the formation and propagation of microcracks. The brittle fracture of Mo takes place by transcrystalline slip along the cleavage plane. The angle of disorientation between grains is approximately equal to $3x10^{-3}$ radians; the crystalline structure of the fracture surface is

Card 1/2

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I048/I248

An electron-microscope study...

the same as that of the base metal. The tough fracture of Mo is inter-crystalline. Accordingly, the brittle-to-ductile transition in Mo starts at 150-200°C. There are 7 figures.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

MASLENKOV, S.B.; DEMKIN, Yu.I.

Method of studying fractures by optical and electron microscopy.
Sbor. trud. TSNIIGHM no.24:254-260 '62. (MIRA 15:6)
(Metallography) (Electron microscopy)

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/126/62/014/006/012/020
E021/E151

AUTHOR: Demkin, Yu.I.

TITLE: Structure of sub-grain boundaries of molybdenum single crystals

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.6, 1962, 910-912

TEXT: A sample 3 mm in diameter cut from a molybdenum single crystal prepared by zone melting was examined. Electropolishing and electro-etching were carried out in solutions of sulphuric acid in methyl alcohol. Microphotographs were taken either directly or by replica techniques. In the majority of cases, sub-grain boundaries were revealed by chains of etch pits. With increase in etching time, the size of each etch-pit increased. Etching after repolishing again showed up these sub-grains. It is possible that the dislocations in the sub-grain network were situated on slip planes. The sub-grain networks obtained on the photomicrographs were examined in detail, and the possible reactions for formation of the network were investigated. The most likely reaction from energy considerations was thought to be:

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Structure of sub-grain boundaries... S/126/62/014/006/012/020
E021/E151

$$\frac{1}{2}\,a\,[\bar{1}1\bar{1}] + \frac{1}{2}\,a\,[1\bar{1}\bar{1}] \rightarrow a\,[00\bar{1}]$$

The formation of the resulting dislocation a [001] proceeded as a result of attraction of intersecting dislocations. There are 4 figures.

ASSOCIATION: Institut kachestvennykh staley TsNIIChM (Institute of High-Grade Steels TsNIIChM)

SUBMITTED: May 12, 1962

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ESTULIN, G.V., DEMKIN, YU.I.

Fractigraphical investigation into the threshold of brittleness of molybdenum.

SPECIAL STEELS AND ALLOYS (SPETSIAL'NYYE STALI I SPLAVY), Collection of Studies, Issue 27, 240 pages, published by the State Scientific and Technical Publishing House for Ferrous and Non-Ferrous Metallurgy, Moscow, USSR, 1962.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ESTULIN, G.V.; DEMKIN, Yu.I.

Fractographic investigation of the critical point in molybdenum brittleness. Sbor.trud.TSNIICHM no.27:156-168 '62. (MIRA 15:8)
(Molybdenum--Brittleness)

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/776/62/000/027/004/004

AUTHORS: Estulin, G. V., Demkin, Yu. I.

TITLE: Fractographic investigation of the brittleness threshold of Molybdenum.

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov. no. 27. Moscow, 1962. Spetsial'nyye stali i splavy. pp. 156-168.

TEXT: The paper describes an experimental investigation of the character of the crack propagation during tough and brittle fracture of Mo and observations of the change in the appearance of the fracture during transition of the metal from the brittle state into the ductile state and an establishment of the relationship between the fractographic appearance of the metal and its microstructure. The paper describes (1) the Mo specimens, which were of the notch-impact type, since the embrittlement-threshold temperature is usually determined from the values of the notch toughness; (2) the general methodology of the investigation, which comprised the making of a carbon replica and its electrolytic removal in a solution of 20 ml H_2SO_4 per 100 ml methylalcohol; and (3) the examination of the replica under the optical and electron-microscope. Grain-boundary identification on the fracture was accomplished by chemical etching in a solution of 10 g KOH + 10 g $K_3Fe(CNS)_6$ per 100 ml water for 3-5 min. The results of the experiments are presented as follows: (A) The structure of brittle and tough fracture of the Mo; (B) structures of the mixed

Card 1/2

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type; and (C) the relationship between the fracture structure and the microstructure of the Mo and the propagation of cracks during failure. It is concluded that: 1. Brittle failure occurs by separation along the cleavage planes under the action of normal stresses; some plastic deformation occurs during failure of connecting material between parallel cleavage planes. 2. The surface of a brittle fracture appears to be a part of the crystalline surface of the metal. The pattern of the facets of brittle fracture depends on the mechanism of crack formation and on the structure of the material. The magnitude and direction of the petal depends on the crystallographic orientation of the cleavage planes in adjacent grains. 3. The tough failure of Mo develops by an intercrystalline process under the action of tangential stresses. Tough fracture has the appearance of smooth surfaces that intersect at certain angles and are commensurable with the grain size. 4. With increasing testing temperature the character of the crack propagation changes, passing from a transcrystalline propagation at room T to an intercrystalline propagation at 300°C. The first regions of intergranular failure appear at 150-200° below that T at which the value of the impact toughness begins to increase. Electron-microscope pictures of the structure of the brittle intergranular failures of forged Mo do not differ from those of the structure of intergranular tough failures. There are 12 figures and 21 references (9 Russian-language Soviet and 12 English-language sources, 3 of which are in Russian translation).

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIN, Yu.I.

Structure of subgrain structure in single crystal molybdenum. Fiz.met.i metalloved. 14 no.6:910-912 D '62. (MIRA 16:2)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.

(Molybdenum—Metallography)
(Crystal lattices)

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIN, Yu.I.; ESTULIN, G.V.

Electron microscopy of fractures in molybdenum. Issl.po zharopr. splav. 8:168-172 '62. (MIRA 16:6)
(Molybdenum--Brittleness) (Electron microscopy)

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, Yu.I.; ESTULIN, G.V.

Structure of intergranular boundaries of recrystallized molybdenum. Issl. po zharoproch. splav. 10:76-80 '63. (MIRA 17:2)

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACCES. .ON NR: AP3008124 S/0126/63/016/003/0421/0426

AUTHOR: Demkin, Yu. I.

TITLE: Effect of etching on dislocation movement in molybdenum monocrystal

SOURCE: Fizika metallov i metallovedeniye, v. 16, no. 3, 1963, 421-426

TOPIC TAGS: molybdenum, monocrystal, dislocation movements, etching effect, subboundary, slip plane

ABSTRACT: The present work was carried out because of the absence of information on the geometry of dislocation movement in molybdenum and also in order to study the variations in the dislocation structure under the action of an electrolytical etching alone (without the application of loads). The samples were etched by a 5% solution of H_2SO_4 in methyl alcohol at current density of 3.5 ma/mm^2 (14C) and 1.7 ma/mm^2 (26C). The following results were obtained: 1) in addition to the dislocations which formed the subboundaries inside separate subgrains, a dense pattern of etching pits was observed; 2) a certain order prevailed in the dislocation distribution inside subgrains--they appeared in parallel rows; some local

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACCESSION NR: AP3008124

dislocation accumulations unrelated to definite subgrains were observed; 3) the dislocations proceeded in steps (when they were leaving an etching pit, the pit became flat-bottomed, while a cone-bottomed pit appeared at the new dislocation position); and 4) the etching process started the sliding of separate dislocations along all the slip planes inherent in a body-centered metal lattice. In the process of etching the course of some dislocations was changed; this was characteristic of spiral dislocations. "The author expresses his gratitude to A. L. Roytburd, I. P. Kushnir, and L. G. Orlov for the discussion of the results and to L. N. Smirnova for her help during the experimentation." Orig. art. has: 5 figures.

ASSOCIATION: Institut kachestvennykh staley TsNIIChM (Institute of Quality Steels TsNIIChM)

SUBMITTED: 12Feb63 DATE ACQ: 24Oct63 ENCL: 00

SUB CODE: ML NO REF SOV: 008 OTHER: 011

Card 2/2

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIN, Yu.I.

Crystallography of a chip from a single crystal of molybdenum. Fiz. met. i metalloved. 16 no.5:790-792 N '63. (MIRA 17:2)

1. Institut kachestvennykh staley TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 12953-65 EWT(m)/EPF(n)-2/EWP(w)/EWA(d)/EWP(t)/EWP(b) Pu-4 JD/JG
ACCESSION NR: AP4043922 S/0279/64/000/004/0131/0138

AUTHOR: Demkin, Yu. I. (Moscow)

TITLE: Structure of the twinning layer in molybdenum single crystals

SOURCE: AN SSSR. Izv. Metallurgiya i gornoye delo, no. 4, 1964, 131-138

TOPIC TAGS: single crystal, molybdenum single crystal, single crystal fracture, single crystal twinning, twinning layer spacial structure, twinning layer formation

ABSTRACT: Experiments have been conducted to determine the spacial structure of a twinning layer formed by impact deformation in high-purity molybdenum single crystals and to establish the relationship between this structure and the plastic deformation of the matrix. On cleaning the specimens in a liquid nitrogen bath, twinnings and secondary, partially open cracks were observed in the crystals, in addition to the usual fractures. Microscopic examination showed that twinning layers in molybdenum single crystals, impact-strained in liquid nitrogen, consist of packets of fragments which are usually interconnected

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 22053-65
ACCESSION NR: AP4043922

in space. If the geometry of the twinning layer coincides with a crystallographic plane of the {112} type, then individual packets of fragments diverge from it at small angles. The fragments reach their greatest length in the direction of the <111> shear lying in the twinning plane. The sides of the fragments are often parallel to the {110} slip planes, but such is not always the case as it varies from section to section along the <111> axis of the fragment. Two types of dislocation clusters associated with twinnings were observed. The first type consisted of the relatively straight clusters which were continuations of the fragments of the twinning band. These clusters are probably caused by healing of crystal twinnings. The second type of clusters were volumetric aggregations of dislocations around the ends of fragments or other distortions of the twinning layer. This type of aggregation probably results from stress relaxation at the head of a decelerating twinning fragment. Orig. art. has: 6 figures.

ASSOCIATION: none

SUBMITTED: 24Oct63 ATD PRESS: 3109 ENCL: 00

SUB CODE: MM,SS NO REF SOV: 005 OTHER: 008

Card 2/2

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACCESSION NR: AP4033615 S/0032/64/030/004/0454/0456

AUTHOR: Demkin, Yu. I.

TITLE: Metallographic exposure of twins and splits in molybdenum

SOURCE: Zavodskaya laboratoriya, v. 30, no. 4, 1964, 454-456

TOPIC TAGS: metallographic examination, twinning, molybdenum, sulfuric acid, methyl alcohol, electrolytic polishing / MBS 2 binocular magnifier

ABSTRACT: A method was developed for the exposure of twins and splits in electrolytically polished molybdenum in a 95% solution of methyl alcohol. The reaction temperature was 110C, the voltage 30-40 V, the diameter of the specimen 3-5 mm, and the time of polishing 2-5 sec. The crystals were deformed by pounding at the temperature of liquid nitrogen. The formation of twins was detected by the characteristic distortion of the contour of the faces (001) and (110). The crystals were then pickled electrolytically in a 5% solution of H_2SO_4 in methyl alcohol at a temperature of 14C and a current density of 3.5 ma/mm^2 at a voltage of 0.1 V. The specimen was then carefully ground on metallographic paper. This revealed the structure of twins not associated with surface deformation effects. Then the specimen was electropolished in a 95% solution of H_2SO_4 in methyl alcohol at 30 V

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACCESSION NR: AP4033615

and a temperature of 110C. The results showed that the distribution of twins did not change significantly after electropolishing, but that they were no longer arranged at the same angle with the surface of the ground end. The splits behaved differently on electropolishing. With increase in time of polishing, the narrow-edged splits multiplied, forming deep grooves which were detected by the use of a binocular magnifier of the type MBS-2. Orig. art. has: 3 figures.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii im. I. P. Bardina (Central Scientific Research Institute of Ferrous Metallurgy)

SUBMITTED: 00 ENCL: 00

SUB CODE: MM NO REF SOV: 002 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACCESSION NR: AP4039604 S/0126/64/017/005/0768/0769

AUTHOR: Demkin, Yu. I.

TITLE: On the motion of dislocations in deformed molybdenum crystals

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 5, 1964, 768-769

TOPIC TAGS: dislocation, crystal, molybdenum, electrolytic etching, plastic deformation

ABSTRACT: The dislocation structure of single crystal molybdenum deformed under a mechanical load was investigated by electrolytic etching. The studies of crystal structure were carried out before and after loading (1200 g load) on the same surface of the specimen. It was found that preliminary plastic deformations do not suppress dislocation movements during the etching process without the applied load, but rather tend to increase these movements. Analysis of the etched surface indicates that the internal stresses in the specimen constitute the foremost cause of dislocation motions. Orig. art. has: 4 figures.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACCESSION NR: AP4039604

ASSOCIATION: Institut kachestvennykh staley, TsNIIChM (Institute of Quality Steels)

SUBMITTED: 25Jul63 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: GP, GC NO REF SOV: 001 OTHER: 001

Card 2/2

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 45078-65 EWT(m)/EPF(n)-2/T/EWP(t)/EWP(b)/EWA(c) Pu-4 IJP(c) JD/JG
ACCESSION NR: AP5002353 UR/0126/64/018/006/0930/0933

39
36
B

AUTHOR: Demkin, Yu. I.

TITLE: Obstructed pile ups of dislocations in Mo-Re alloy (35 at.% Re)

16
27 21

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 6, 1964, 930-933

TOPIC TAGS: twin band, tungsten, zone melting, electrolytic pickling, dislocation pile up, elastic twinning, monocrystal, molybdenum rhenium alloy, packing defect energy, body centered crystal

ABSTRACT: The decrease in the γ-energy of the packing defect with increase in Re concentration is believed to be a factor in the increase in the plasticity of molybdenum and tungsten when they are alloyed with rhenium. Since the experimental proofs of this assumption are insufficient, the author undertook experiments to produce additional proof. Specimens cut from a rod of Mo-Re alloy (35 at.% Re) of mainly the monocrystal type, subjected to triple electron beam zone melting and subsequent impact deformation at room temperature were electrolytically polished and pickled in a solution of H_2SO_4 in methyl alcohol which revealed the subboundaries, the pile-ups of etch pits around the scratch marks and the indentations of

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L 45078-65

ACCESSION NR: AP5002353

3

microhardness and discretely constructed slip bands and slip lines. This report is confined to the pile-ups of dislocations in front of the twin bands which remain in the crystal following an "elastic" twinning. The alloy was found to contain two types of such pile-ups of dislocations: those with an inherent transverse slip and those without that slip. This conflicts with the findings of A. W. Sleeswyk and E. Yutsva (Acta Met., 1962, 10, 8, 705) whose electronmicroscopic examination of foils of Mo-Re alloy (35 at.% Re) revealed only pile-ups of the first type, with a distinct transverse slip, in front of the twins. Therefore, the author also repeated their experiments and found that in the process of production of the foil the dislocation structure becomes altered; the nature of the movement of dislocations in a thin foil differs markedly from the movement excited by mechanical loading in bulky specimens. Thus, firm experimental proof that the alloying of molybdenum with rhenium reduces the packing-defect energy has been obtained. Rhenium remains the only known element that changes the lumes structure of dislocations in body-centered crystals in the low temperature range. "The author is indebted to A. L. Roytburd for a stimulating discussion of his findings and to L. N. Smirnova for assistance in conducting the experiments." Orig. art. has: 3 figures.

ASSOCIATION: Institut kachestvennykh staley (Institute of Quality Steel)

TsNIICHERMET

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APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 45078-65

ACCESSION NR: AP5002353

SUBMITTED: 11Mar64 ENCL: 00 SUB CODE: MM, MS

NO REF SOV: 005 OTHER: 005

Card 3/3

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIN, Yu.I.

Delayed accumulation of dislocations in an alloy of molybdenum and 35 atomic percent rhenium. Fiz. met. i metalloved. 18 no.6: 930 D '64. (MIRA 18:3)

1. Institut kachestvennykh staley TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii imeni Bardina.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIN, Yu.I.

Nature of the plasticity of Mo - Re alloys. Dokl. AN SSSR 166 no.1:71-73 Ja '66. (MIRA 19:1)

1. Institut kachestvennykh staley tsentral'nogo nauchno-issledovatel'skogo instituta chornoy metallurgii im. I.P. Bardina. Submitted April 23, 1965.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 10446-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6023701 SOURCE CODE: UR/0126/66/021/004/0560/0567

30

AUTHORS: Demkin, Yu. I.; Smirnova, L. N.

ORG: Institute for Quality Steels (Institut kachestvennykh staley); TsNIICHERMET im. I. P. Bardin

TITLE: Structure of binary layers on the surface and in the interior of a metal

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 4, 1966, 560-567

TOPIC TAGS: metallurgic research, rhenium containing alloy, molybdenum containing alloy

ABSTRACT: The twinned structures found on the surface and in the interior of Mo + 35 at. % Re alloy were investigated. The investigation supplements the results of Ye. M. Savitskiy i dr. (Sb. Issledovaniya zharoprochnykh materialov t. 9. M., Izd. AN SSSR, 1962, str. 194). Microstructure photographs of the surface and the cross section of specimens are presented (see Fig. 1). It was found that the structure of binary layers on the surface of the alloy differs qualitatively from the binary layers' structure in the interior of the alloy. The authors thank V. M. Kosevich and A. L. Roytburd for a critical evaluation of the data.

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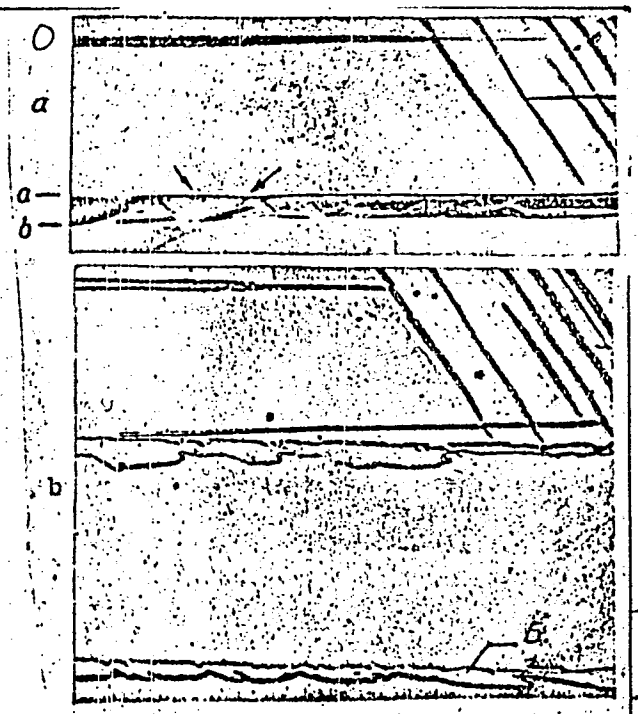
L 10446-67

ACC NR: AP6023701

Fig. 1. Distortion of the lower boundary of a binary layer: a - on the surface, and b - in the interior of the specimen x 600.



Orig. art. has: 5 graphs.

SUB CODE: 11/ SUBM DATE: 20Apr65/ ORIG REF: 010/ OTH REF: 008

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APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACC NR: AR6033097 SOURCE CODE: UR/0269/66/000/007/0056/0056

AUTHOR: Livshits, M. A.; Demkina, L. B.

TITLE: Width of Hδ, D_3 and λ10830 lines in solar spicules

SOURCE: Ref. zh. Astronomiya, Abs. 7.51.392

REF SOURCE: Solnechnyye dannyye, no. 10, 1965, 55-58

TOPIC TAGS: solar spicule, spectral line, spectral line width, coronograph /IZMIRAN coronograph

ABSTRACT: The widths of spectral lines Hα, D_3 and λ10830 in spicules were measured on the basis of spectrograms obtained in 1964—1965 with the IZMIRAN coronograph. Photographs of spectra and typical line profiles are given. The profiles are not Doppler profiles. A flat apex, often with two maxima, is typical for them. Line widths vary sharply from one spicule to another. The width of line Hδ lies within 0.43—0.73 Å. Profiles with Δλ≈ 0.56 Å, belonging, apparently, to elements 2000 km in diameter, and profiles with Δλ≈ 0.45 Å occur most frequently. The widths of D_3 lie within 0.4—0.7 Å, and the value most frequently occurring is that of Δλ≈ 0.56 Å. The width of λ 10830 is 1.0—1.8 Å, with a

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACC NR: AR6033097

mean value of $\Delta\lambda \approx 1.45$ Å. The bibliography consists of 6 titles. B. Iopsha. [Translation of abstract]

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Card 2/2

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

A

Colorimeter. L. I. Demkina. Russ. 20,301 and 20,004, April 30, 1932.

COMMON ELEMENTS

MATERIALS INDEX

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

B-I-9

Instrument for controlling the decoloration of glass. L. Dmitrieva (Tech. Phys. U.S.S.R., 1937, 4, 360—362).—The construction and use of the instrument, which is essentially a combination of a photometer and a wedge calorimeter, is described. The instrument is suitable for determining the necessary concentration of colouring matter required to ensure colourlessness and the least possible diminution in transparency, and for evaluating the degree of colourlessness in a finished glass. C. R. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, L. I.

(1)

Circulations in the vitreous body. L. I. Demkina (*C. R. Acad. Sci. U.R.S.S.*, 1953, 90, 765—766).—Entoptic observations of the movements of floaters in an eye which had had a retinal detachment treated by diathermy were consistent with the view that convection currents occurred in the vitreous, maintained by cooling of the anterior part of the eye. G. S. BRISDLEY.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, L. I.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 104 - 4/9

Authors : Demkina, L. I., Dr. of Tech. Sc.

Title : Idea about the internal structure of silicate glass

Periodical : Stek. i ker. 2, 10-15, Feb 1954

Abstract : The opinions of several Soviet scientists regarding the internal structure of glass are quoted. The composition of glass is usually determined not by its components but by the content of oxides. Any discrete change in the characteristics of glass close to the phase boundary is usually due to the appearance of a new chemical compound which corresponds not to the contiguous phase area but to the following one. Since the eutectic mixture of glass consists of two neighboring chemical compounds, glass which combines two eutectic mixtures actually contains three chemical compounds. The composition of a eutectic mixture of solidified glass corresponding to a refraction index, as shown in the composition specific-volume diagram, is different from the composition of a eutectic mixture at its solidification point. Five USSR references (1938-1952). Diagrams

Institution: .....

Submitted: .....

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, L. I.

USSR/Chemical Technology -- Chemical Products and Their Application. Silicates. Glass. Ceramics. Binders, I-9

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 1565

Author: Demkina, L. I.

Institution: Academy of Sciences USSR

Title: Theories on the Internal Structure of Silicate Glasses Based on Results of Investigations of the Properties of a Number of Simple Systems

Original Periodical: Sb.: Stroyeniye stekla, Moscow-Leningrad, Academy of Sciences USSR, 1955, 107-119

Abstract: See also Referat Zhur - Khimiya, 1955, 2515.

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APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, L. I.

USSR/Chemical Technology. Chemical Products and their Application. Glass. Ceramics. Building Materials. J-12

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27612

Author : L.I. Demkina.
Inst :
Title : Imperfections of Theory of Continuous Disorderly Lattice.

Orig Pub: vSb Stroyeniye stekla. M.-L., AN SSSR, 1955, 298-300.

Abstract: According to the author's ideas, the concept of a silica skeleton may be introduced only in reference to very acid glasses, when the portion of silica, which is not bound with basic metal oxides into silicates, is great. All the other mass of glass appears as an agglomerate of crystallites of various composition having no "common" silica skeleton.

Card : 1/1

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

Demkina, L. I.

Calculation of composition of glasses having low crystallization capacity. Yu. V. Aksenova, P. V. Bukarinova, L. N. Golubyatnikova, L. I. Demkina, and Z. N. Shchegolova. *Steklo i Keram.*, 12 [8] 7–11 (1955).—In developing the composition of acid optical glasses, a dependence was observed between molar percentage composition and crystallization capacity. Multicomponent glasses were projected on the composition triangle of K_2O-Na_2O-SiO_2. From the ratio of K_2O/Na_2O in multicomponent glass, its projection on the curve of the same K_2O/Na_2O in the triangle of K_2O-Na_2O-SiO_2 is determined with the aid of $\Delta SiO_2 = SiO_2 - 4K_2O - 2(Na_2O + PbO + B_2O_3) - (CaO + BaO) - 0.5(ZnO + MgO)$. Crystallization capacities of 22 glasses were determined experimentally and plotted on the triangle for each projected multicomponent glass. Results show the relationship between crystallization capacity and composition.

B.Z.K.

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

5(2) PHASE I BOOK EXPLOITATION SOV/1927

Demkina, Lidiya Ivanovna

Issledovaniye zavisimosti svoystv stekol ot ikh sostava (Study of the Relationship Between Properties and Composition of Glasses) Moscow, Oborongiz, 1958. 238 p. Errata slip inserted. 2,050 copies printed.

Ed.: L.S. Volershteyn, Engineer; Ed. of Publishing House: M.S. Anikina; Tech. Ed.: V.P. Rozhin; Managing Ed.: A.S. Zaymovskaya, Engineer.

PURPOSE: The book is intended for scientists and engineers employed at institutes and factories concerned with the manufacture of glass, the study of the properties of glass in relation to its composition, and the development of new glasses to meet specific requirements.

COVERAGE: The book describes regularities of the relationship between the properties and composition of glass. A method is given for the calculation of density and indices of refraction and of dispersion of multicomponent glasses based on their composition. The author's concepts of the structure of silicate glasses are also expounded. No personalities are mentioned. There are 150

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references, 47 of which are Soviet, 69 English, 3 French, 27 German, 2 Italian, and 2 Japanese.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DANYUSHEVSKIY, Yevgeniy Emmanuilovich; DEMKINA, L.I., doktor tekhn.nauk, obshchiy red.; BOGOMOLOVA, M.F., red.; ZUDAKIN, I.M., tekhn.red.

[Principles of the linear fritting of optical glass] Osnovy lineinogo otzhiga opticheskogo stekla. Pod obshchei red. L.I. Demkinoi. Moskva, Gos.izd-vo obor. promyshl., 1959. 98 p. (MIRA 12:4)
(Glass, Optical)

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

AUTHOR: Syritskaya, Z. N. S/072/60/000/03/021/025
B003/B008

TITLE: 3rd All-Union Conference on the Vitreous State

PERIODICAL: Steklo i keramika, 1960, Nr 3, pp 43-46 (USSR)

ABSTRACT: The 3rd All-Union Conference on the Vitreous State was held in Leningrad at the end of 1959. It was organized by the Institut khimii silikatov AN SSSR (Institute of the Chemistry of Silicates AS USSR), Vsesoyuznoye khimicheskoye obshchestvo imeni D. I. Mendeleyeva (All-Union Chemical Society imeni D. I. Mendeleyev) and Gosudarstvennyy opticheskiy institut imeni S. I. Vavilova (State Optical Institute imeni S. I. Vavilov). More than 100 reports on the structure of glass, investigation methods of the vitreous state, the mechanism of vitrification and physicochemical and technical properties of glasses were delivered. The Conference was opened by Academician A. A. Lebedev.

At the 7th meeting, 6 reports dealt with glasses as semiconductors, 9 with the coloring of glasses and the influence of radiation and 4 reports with technical properties of glasses. [illegible] V. V. Vargin and T. N. Veynberg, "Coloring of Glasses in Connection With Their Structure". N. I. Vlasova, Ya. I. [illegible], A. A. Kefeli, "Absorption Spectrum of the Co^{2+} Ion as Indicator for the Coordination of Boron and Aluminum in Glasses". V. P. Shailov and N. V. Berbash reported on the change of the spectral absorption of glasses of simple composition under the influence of gamma rays. G. O. Karapetyan reported on the influence of the structure of glasses on spectral and chemical properties of the [illegible]. N. P. [illegible] reported on the role of the admixtures and the crystalline state of the lattice in the coloring of quartz glass by gamma radiation. L. M. Blyumen and M. L. Shuster reported on the physicochemical nature of pore formation in silicate melts (foam glass, ceramite). Ye. V. Vernolayeva reported on physico-chemical investigations of melts of refractory oxides in a state of equilibrium. I. F. Ponomarev, "The Importance of the Vitreous Phase in the Formation of the Ceramic Body and the Cement Clinker". V. A. Fresnov reported on the physico-

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chemical fundamentals of the fusing of glass and metal. The 8th meeting dealt with physical chemistry and mechanical properties of glass. K. S. Yevstrop'yev, O. M. Bartenev and S. K. Dubrovo made comprehensive reports. A. A. Appen reported on the fundamental structural parameters which determine the properties of the glass. A. V. Gladkov, V. A. Ratobyl'skaya, V. V. Tarasov reported on research results of the polymeric structure of inorganic glasses. V. I. Deykina reported on peculiarities of the expansion of oxides in silicate glasses. V. O. Slavyanskiy reported on the subject: "The Energy of Covalent Bonds in Glass and Their Role in the Process of the Viscous Flux". Z. N. Syritskaya reported on physico-chemical properties of aluminophosphate glasses. Yu. A. Shnidt reported on the dependence of the properties of alkali silicate glasses on the composition. Z. Z. Shchuglova reported on: "Investigation of the Dependence of the Optical Properties of Phosphate Glasses on the Composition". A. K. Yakkhind reported on the subject: "The Periodic System and the Optical Constants of Glass". M. S. Aslanova reported on: "Mechanical Properties of Glass Fibers". O. M. Bartenev, A. S. Yereneyeva made a report on the mechanical properties of inorganic glasses in the anomalous interval and on their structure. Ya. I. Koslovskaya reported on the elastic properties of glasses and on the influence of the composition of the glasses on their mechanical

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properties. A. V. Abrasyan reported on the subject: "Leaching of Melion Glasslike Basalts by Aqueous Solutions of Acids and the State of the Oxides in the Structure of Glass Basalts". S. M. Brekhovskikh and V. N. Sesorova reported on synthesis and investigation of hafnium silicate glasses. S. K. Dubrovo reported on physicochemical properties of gallium silicate glasses. V. A. Dubrovskiy and T. S. Dubrovskaya reported on the surface film forming on calcium-sodium glass in the acidic, neutral and basic medium. The following persons reported at the final meeting: V. P. Kokorina on the influence of the alkaline earth oxides on the chemical stability of glasses in a humid atmosphere; L. Ya. Masolev on vitrification and properties of borate glasses; B. P. Nikol'skiy, Ye. A. Materova and V. V. Moiseyev on the reaction of electrode glasses with solutions. Doctor Vogel and Hoetgor spoke as guests from Eastern Germany. Academician N. V. Belov, M. A. Bezborodov, I. I. Kitaygorodskiy, and E. K. Keler also spoke at the final meeting.

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B004/B058

AUTHOR: Demkina, L. I.

TITLE: New System of Calculating the Heat Expansion Coefficients of Silicate Glasses

PERIODICAL: Steklo i keramika, 1960, No. 10, pp. 5-11

TEXT: The author discusses the various equations which were proposed for calculating the expansion coefficients of glasses and can all be reduced to a linear equation: $\alpha = \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \ldots = \sum \alpha_o x_o$ (1). α is the linear expansion coefficient of the glass; α_1, α_2, α_3 are constants corresponding to the expansion of the individual components; and x_1, x_2, x_3 is the content of the components in the glass. As a rule, this is expressed in parts by weight or molar parts. No linear temperature dependence of α is, however, obtained thereby. This error can be avoided when the parts by volume b_o of the components are substituted. For each oxide, the constant s_o was found which is called the structure coefficient and the following

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relation is derived: $b_o^{(n)} = a_o^{(n)}/s_o^{(n)} : \sum a_o/s_o$ (2), a_o being the part by weight of a component in the glass. The values of s_o for 16 oxides are mentioned in Table 1 along with the values for the relative volume $S_{SiO_2} : s_o = 60 : s_o$. The expansion coefficient of the glass is then given as $\alpha = b_1\alpha_1 + b_2\alpha_2 + \ldots = \sum b_o\alpha_o$ (4). On the basis of a paper by Shermer (1956) who studied the expansion coefficients of the systems $Li_2O - SiO_2$; $Na_2O - SiO_2$; and $K_2O - SiO_2$, the constants α_1 for SiO_2 and α_2 for alkali oxides were calculated (cf. Fig. 3). The relation $\alpha_o = A_o + \varphi_o t$ (5) is written next. A_o is the value of the constant α_o at 0^oC; φ_o is the angular coefficient which is negative for SiO_2 and positive for alkali oxides. The following relation is assumed for ternary glasses: $\alpha = b_1x_1 + b_2x_2 + b_3x_3$ (6). A study of ten glasses showed that the values of α calculated from this equation deviate from the experimental values by $\pm (1 - 2) \cdot 10^{-7}$ as a maximum. Table 2 gives the values of A_o and φ_o for

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some types of glass. These values were found to depend on the chemical structure of the glasses. This is explained by the formation of various structural groups and by the influence of the chemical bonds. Using the method proposed here, the expansion coefficient of glasses can be calculated more accurately than from the equations used so far. A.A. Appen and A. M. Selezneva are mentioned. O. S. Shaveley participated in the calculations.

Text to Table 1: 1) Oxide formula; a) chemical; b) structural; 2) molecular weight; 3) structure coefficient; 4) relative volume of oxide in glass.

Text to Fig. 3: I: lithium glass; II: sodium glass; III: potassium glass; 1: Li_2O, 2: Na_2O, 3: K_2O.

Text to Table 2: 1) oxide; 2) glasses for which the constants are valid; 3) potassium silicate; 4) sodium silicate; 5) lithium silicate; 6) flint glass with Pb > 46 percent by weight; 7) crown glass with BaO < 15 percent by weight.

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1) Формула окисла		Молекулярный вес M_0	Структурный коэффициент S_0	Относительный объем окисла в стекле
химическая a)	структурная b)	2)	3)	4) S_{SiO_2}
SiO_2	$[SiO_4]$	60	60	1,00
TiO_2	—	80	80	0,75
ZrO_2	—	123	123	0,49
B_2O_3	$[BO_3]$	70	70	0,86
	$[BO_4]$		43	1,40
Al_2O_3	$[AlO_4]$	102	59	1,02
	$[AlO_6]$		102	0,59
As_2O_3	$[AsO_4]$	198	107	0,56
Sb_2O_3	$[SbO_4]$	292	154	0,39
PbO	PbO—I	223	343	0,17
	PbO—II		223	0,27
	PbO—III			
BaO	—	153	213	0,28
ZnO	$[ZnO_4]$	81,5	223	0,27
CaO	—	56	86	0,70
MgO	$[MgO_4]$	40	140	0,43
	$[MgO_6]$		40	1,50
BeO	$[BeO_4]$	25	110	0,55
K_2O	—	94	94	0,64
Na_2O	—	62	62	0,97
Li_2O	—	30	30	2,00

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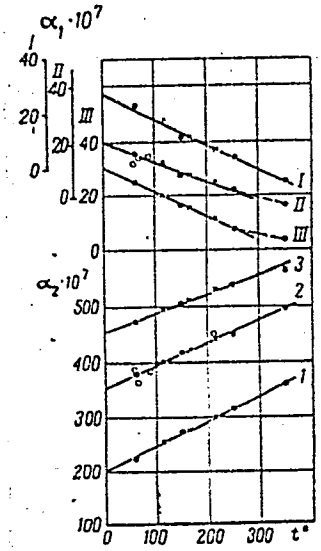
Окисел 1)	$\Lambda_0 \cdot 10^7$	$\varphi_0 \cdot 10^7$	$\alpha_0 \cdot 10^7$ при 70°	$\alpha_0 \cdot 10^7$ при 220°	Стекла, для которых справедливы постоянные 2)
SiO_2	31	−0,100	24	9	3) Калиево-силикатные
	30	−0,075	25	13	4) Натриево-силикатные
	37	−0,090	31	17	5) Литиево-силикатные
$[BO_4]$	−43	0,47	−10	60	
$[AlO_4]$	−27	0,47	6	76	
PbO-I	110	0,68	158	260	6) Флинты с PbO < 46 вес. %
BaO	170	0,45	202	269	7) Кроны с BaO < 15 вес. %
ZnO	−110	1,30	−5	220	
CaO	70	0,54	108	187	
MgO	−240	1,40	−142	68	
BeO	−180	0,52	−144	−66	
K_2O	455	0,35	480	532	
Na_2O	355	0,40	383	443	
Li_2O	200	0,47	233	303	



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15.2120 1142, 3309, 3109

23346 S/058/61/000/006/032/063
A001/A101

AUTHOR: Demkina, L.I.

TITLE: Additivity of properties of silicate glasses in connection with their structure

PERIODICAL: Referativnyy zhurnal. Fizika, no. 6, 1961, 224, abstract 6D69 (V sb. "Stekloobrazn. sostoyaniye", Moscow-Leningrad, AN SSSR, 1960, 48-55, Discus. 98 - 112)

TEXT: Refraction index n, density ρ, heat capacitance c, thermal expansion coefficient α, and some other properties of glass can be calculated by the formula of their additive dependence on the glass composition: $p = b_1p_1 + b_2p_2 + \ldots + b_np_n$, where p_i is the value of a given property p characteristic for the i-oxide in the glass, b_i is the relative volume occupied by the i-oxide (or its compound) in the glass. Volumetric relations of oxides in simple and complex glasses are due to specific features of structures which have the oxides in formation of compounds in the glass. The coefficient of conversion from weight to volume relations is named the structural coefficient. For alkali metals structural coefficients are equal to molecular weights of the oxides, and their volumetric fractions are equal to molar fractions. For sesquioxides, forming tetrahedra RO_4, structural coefficients

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are equal to gram-formula weight of group RO_2. For oxides of bivalent metals capable of forming stable silicates, structural coefficients are equal to molecular weights of these silicates. Based on structural coefficient values determined earlier, the present author processed experimental data of various authors on composition- and temperature dependences of α in alkali-silicate and multicomponent optical glasses. The graphs of temperature dependence of α of oxides in glass are represented by straight lines of different slope and level above the abscissa axis. The similar course of α-versus-temperature straight lines is observed for each given oxide both in simple and complex glasses. The difference of straight lines for different oxides is explained by their structural features. The data obtained made it possible to analyze the summary, experimentally determined temperature increments of refraction indices $\beta = \Delta n / \Delta t$; two parts were singled out in these increments: the part determined by the thermal change in ρ of the glass, and the part caused by displacement of absorption band due to temperature change β_λ. The value of β_λ proved to be linearly correlated with dispersion of oxides in the glass, which was expressed by the inverse dispersion coefficient. There are 20 references.

S. Yakhkind

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, L.I.; URUSOVSKAYA, L.N.; CHIZHOVA, A.S.

Volatility of fluorine-titanium flint glasses. Stek. i ker. 18 no.12:4-6 D '61. (MIRA 16:8)

(Glass, Optical--Analysis)

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 10596-63 EWP(q)/BDS/EWT(m) AFFTC/ASD Pq-4 WH

ACCESSION NR: AP3000968 S/0072/63/000/006/0015/0019

AUTHOR: Demkina, L. I. (Dr. of technical sciences); Novozhilova, I. D. (Junior scientific worker); Sinikas, R. I. (Technician)

58

TITLE: Volatility of optical glasses 15

SOURCE: Steklo i keramika, no. 6, 1963, 15-19

TOPIC TAGS: volatility of optical glasses

ABSTRACT: Authors measured the losses of optical glasses due to volatility. This was done by heating the glass sample in a furnace and periodically weighing the glass-containing crucible which is suspended from one of the balance beams of an analytical balance. The glass samples were heated in a platinum furnace for 2 or 4 hours at 1100-1400 degrees. Air feed was 1 meter per second. The weight losses in the sample, related to a unit of glass surface and holding time, served as a numerical characteristic of the glass's volatility as well as its property. A detailed description of the measurements is given and volatility as a function of temperature is shown on curves. Formulas are also presented for calculating the volatility. Orig. art. has: 6 figures, 2 tables and 2 formulas.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/080/63/036/001/007/026
D226/D307

AUTHOR: Demkina, L.I.

TITLE: On the additivity of the specific refraction of glasses

PERIODICAL: Zhurnal prikladnoy khimii, v. 36, no. 1, 1963, 75 - 85

TEXT: The above subject is discussed mathematically in view of its importance in predetermining glass compositions and in determining the optical properties of oxides contained in the glass. Specific refraction is of interest since it is generally assumed to be an additive property. It is shown that the linear Gladstone-Daly expression for refraction, r,

$$r = \frac{n-1}{d} = \frac{n_1-1}{d_1} a_1 + \frac{n_2-1}{d_2} a_2 \qquad (3)$$

where n is the refractive index, d is the density and a is the

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weight fraction becomes

$$r = \frac{N}{d} = \frac{N_1}{d_1} a_1 + \frac{N_2}{d_2} a_2 \qquad (3A)$$

and

$$r = \frac{N}{d} = \frac{b_1 N_1 + b_2 N_2}{b_1 d_1 + b_2 d_2}, \qquad (7A)$$

(where N = (n-1) and b = vol.fraction), if n is linearly related to d, both n and d being additive. It is demonstrated from literature data that, within certain ranges of compositions, n and d are linearly related, whilst r is not linearly dependent on the weight-proportions of the oxides. Deviations Δ r in r, as measured and calculated by Eq. (3A), exceed the experimental error and must thus be taken into consideration. The results of Young and Finn (J. Res. Nat. Bur. Stand., 25, 759 (1940)), who

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neglected this point are discussed, estimating the errors. It is shown that error (Δr, Δq) in r and dispersion, q, of an oxide, calculated by linear extrapolation from glasses with a low concentration of this oxide, are equal to zero only if $r_1 = r_2$ and $q_1 = q_2$, or when $d_1/s_1 = d_2/s_2$, where s = structural coefficients of oxides in the glass. General expressions are given for Δr and Δq, so that $(r + \Delta r)$ and $(q + \Delta q)$ are equal to values of refraction and disperion extrapolated from glasses in which the concentration of the oxide concerned approaches zero. Literature and theoretical values are compared. It is shown that as the amount of oxide in the glass is increased, r and q change first according to one law, and then according to another (above concentrations corresponding to orthosilicates). The results confirm the validity of author's methods (Issledovaniye zavisimosti svoistv stekol ot ikh sostava [Study of the dependence of the properties of glasses on their composition], Oborongiz, M, (1958); OMP, 2, 41 (1957)), for the calculation of constants in the additivity formula. Young and Finn's suggestions regarding

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the additivity of r and q are only approx. valid for certain concentration ranges. Refraction calculated by Eq. (3) may be used for an accurate computation of n if density and optical constants of the glass are linearly related. There are 9 figures and 2 tables.

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L 15882-66 EWP(e)/EWT(m) WH

ACC NR: AP6002807 SOURCE CODE: UR/0237/60/000/011/0027/0031

AUTHOR: Demkina, L. I.; Selezneva, A. M.; Shchavelev, O. S.; Babkina, V. A. 4/5 B

ORG: none

15,44

TITLE: The dependence of thermooptical properties of silicate glasses on their composition

SOURCE: Optiko-mekhanicheskaya promyshlennost', no. 11, 1960, 27-31

TOPIC TAGS: silicate glass, temperature dependence, optic glass, glass property

ABSTRACT: The present paper gives the results of an experimental study of the average increase in the value of the absolute index of refraction in glasses caused by increases in temperature at 643, 508, and 480 mμ wavelengths. The four base glasses used consisted of 1) SiO_2-80, K_2O-4, Na_2O_3-16, and As_2O_3-0.1; 2) SiO_2-80, K_2O-8, Na_2O-12 and As_2O_3-0.1; 3) SiO_2-75, PbO-19, K_2O-6, and As_2O_3-0.2; and 4) SiO_2-75, B_2O_3-3, As_2O_3-0.2, BaO-7, ZnO-4, K_2O-8, and Na_2O-3. They contained various amounts of SiO_2, TiO_2, B_2O_3, Al_2O_3, As_2O_3, Sb_2O_3, PbO, BaO, ZnO, CaO, K_2O, and Na_2O admixtures. Experimental data orga-

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nized in the form of comprehensive tables permitted empirical determinations of the constants entering into theoretical expressions established by L. I. Demkina (Issledovaniye zavisimosti svoystv stekol ot ikh sostava, Oborongiz, 1959) describing the temperature dependence of various optical indexes. Orig. art. has: 7 formulas, 2 figures, and 5 tables.

SUB CODE: 11, 20 / SUBM DATE: 12Aug60 / ORIG REF: 006 / OTH REF: 008

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, L. I.

"Results of symposium on the optical properties of glasses."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 17990-66 EWP(e)/EWT(m) WH

ACC NR: AP6007676 SOURCE CODE: UR/0413/66/000/003/0049/0049

INVENTOR: Demkina, L. I.; Polukhin, V. N.

ORG: none

26
B

TITLE: Optical glass. Class 32, No. 178455

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 3, 1966, 49

TOPIC TAGS: optic glass, lanthanum containing optic glass

ABSTRACT: An Author Certificate has been issued for an optical glass based on B_2O_3, La_2O_3, PbO, ZNO_2, SiO_2, and RO [sic]. To obtain a low-crystallizability glass having a high refractive index and smaller dispersion in the blue part of the spectrum, the formulation used is: 30—55% B_2O_3; 5—30% La_2O_3; 15—60% PbO; <10% ZnO_2; <5% SiO_2, <10% RO [sic]; and in addition 5—30% Ga_2O_3; and <10% Al_2O_3. [SM]

SUB CODE: 11/ SUBM DATE: 04Jan65/ ATD PRESS: 4212

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UDC: 666.112.92
666.221.4

APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 39685-66 EWP(e)/EWT(m) GD-2/WH

ACC NR: AP6009531 (A) SOURCE CODE: UR/0413/66/000/005/0060/0060

INVENTOR: Demkina, L. I.; Urusovskaya, L.N.

ORG: none

TITLE: Optical glass. Class 32, No. 179441

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 5, 1966, 60

TOPIC TAGS: optic glass, light refraction, light dispersion

ABSTRACT: An Author Certificate has been issued for optical glass containing B_2O_3 and Al_2O_3. To obtain glass with refraction of 1.56--1.64, a coefficient of dispersion of 38--32, and relative partial dispersion in the blue part of the spectrum of 0.630 - 0.645, it should contain the following components (wt %): B_2O_3 not more than 7; Al_2O_3 not more than 1; and, in addition, $Al(PO_3)_3$ 40--55; Bi_2O_3 not more than 10; KF 5-12, PbO not more than 7; NaF 15--25; WO_3 not more than 3; TiO_3 5--15. [NT]

SUB CODE: 20/ SUBM DATE: 11Dec61/

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

L 32746-66 EWT(m)/EWP(e) WH

ACC NR: AP6012129 (A) SOURCE CODE: UR/0413/65/000/007/0051/0051

INVENTOR: Demkina, L. I.; Polukhin, V. N.

ORG: None

27
B

TITLE: Glass. Class 32, No. 180314

SOURCE: Izobreteniya, promyshlennyye obrazcy, tovarnyye znaki, no.7, 1966, 51

TOPIC TAGS: glass, glass composition

ABSTRACT: An author certificate has been issued for glass containing SiO_2, PbO, Tl_2O, Al_2O_3, TiO_2, K_2O, and As_2O_3. To increase the scattering in the blue region of the spectrum, the following wt. (%) of the above components is suggested: SiO_2, 29.0; PbO, 34.0; Tl_2O, 29,7; Al_2O_3, 2.0; TiO_2, 3.0; K_2O or Na_2O, 2.0; As_2O_3, 0.3.

SUB CODE: 11/ SUBM DATE: 28Nov61

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACC NR: AP6035718 (A) SOURCE CODE: UR/0413/66/000/019/0076/0076

INVENTOR: Demkina, L. I.; Shcheglova, Z. N.

ORG: none

TITLE: Optical glass. Class 32, No. 186661

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 76

TOPIC TAGS: optic glass, gamma radiation effect, glass property, glass

ABSTRACT: An Author Certificate has been issued for an optical glass, containing P_2O_5, BaO, Al_2O_3, and B_2O_3. To increase its resistance to the effect of gamma radiation, lower its tendency to crystallization, and to improve its finishing properties, the composition of the optical glass is set as follows (wt. %): 50—85 P_2O_5, 20—40 BaO, 3—10 Al_2O_3, and a maximum of 8 of B_2O_3. The glass also contains not more than 10% SiO_2, not more than 5% La_2O_3, and not more than 0.5% CeO_2 or 1% As_2O_3. [Translation] [NT]

SUB CODE: 11/SUBM DATE: 14Aug65/

UDC: 666.112.9'623'431'273-31'185-32

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACC NR: AP7002574 SOURCE CODE: UR/0413/66/000/023/0068/0068

INVENTOR: Demkina, L. I.; Polukhin, V. N.; Zimina, M. V.; Omel'chenko, G. A.

ORG: none

TITLE: Optical glass. Class 32, No. 189133

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 23, 1966, 68

TOPIC TAGS: optic glass, refractive index, crystallization, chemical stability

ABSTRACT: This Author Certificate introduces optical glass with a high index of refraction of the order of 1.75—181 made with B_2O_3, La_2O_3, SiO_2, CdO, Al_2O_3, ZrO_2, TiO_2, and WO_3. To increase the chemical stability of the optical glass and reduce its crystallization capacity, the above components are introduced in following amounts (%): 6—25 B_2O_3, 13—28 La_2O_3, 5—20 SiO_2, 30—46 CdO, 1—3 Al_2O_3, 1—4 ZrO_2, not more than 6 TiO_2, and not more than 3 WO_3; in addition, not more than 11 ZnO and not more than 5 Ga. [Translation] [NT]

SUB CODE: 11/SUBM DATE: 15May65/

Card 1/1 UDC: 666.113.831'.681'.654'.621'.82'.78'.48'.47'.28'.27

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

S/072/61/000/012/001/003
B105/B110

AUTHORS: Demkina, L. I., Urusovskaya, L. N., Chizhova, A. S.

TITLE: Volatility of fluoro-titanic flints

PERIODICAL: Steklo i keramika, no. 12, 1961, 4-6

TEXT: Experiments were made to determine the glass losses caused by volatilization and to find out whether these losses are caused only by the volatility of fluorine or also by other components. ЛФ9 (LF9) glass and fluoro-titanic flints with $n_D \simeq 1.64$ were used. The refractive index was measured by N. Ye. Truskova with Pulfrich's refractometer. The content of fluorine and boric anhydride in the glass and of fluorine in the sublimate was determined. N. V. Korolev carried out a microspectral analysis of the glass sublimate of LF9 glass. Heat-treatment of LF9 glass at 1300°C for 1 - 8 hrs has shown that volatilization ($mg/cm^2 \cdot hr$) decreased with time. The increase in the refractive index is proportional to the loss of fluorine. The loss of 1% F increases n_D by an average of $47 \cdot 10^{-4}$. The

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loss in weight of the glass, however, is twice as high as the loss of fluorine. On the basis of the microspectral analysis of the sublimates of LF9 glass, the components of the glass which volatilize together with the fluorine were determined. On the basis of the atomic concentrations in the sublimate: F : K : Si : Ti : Al : B = 1.0 : 0.33 : 0.079 : 0.027 : 0.035 : 0.045, and assuming that all the elements volatilize in the form of fluorides, the sublimate contains: 52.0% KF, 22.3% SiF, 9.1% TiF, 8.0% AlF_3, 8.3% BF_3, and 0.3% F. Therefore, during the melting of the fluoro-titanic flints, the fluorides of several elements contained in the glass volatilize, the ratio of fluorides depending on the glass composition. This was proved by determining the losses ΔF and ΔBO_3 on glass specimens of different compositions (Table 2). There are 4 figures, 2 tables, and 1 Soviet-bloc reference.

Legend to Table 2: (a) synthetic composition of glasses in parts by weight; (b) content in %; (c) on the basis of synthesis; (d) on the basis of analysis.

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

ACCESSION NR: AP4036973 S/0078/64/009/005/1285/1288

AUTHOR: Kozlov, A. S.; Demkina, N. I.

TITLE: Coprecipitation of copper with cadmium ferrocyanide.

SOURCE: Zhurnal neorganicheskoy khimii, v. 9, no. 5, 1964, 1285-1288

TOPIC TAGS: copper, precipitation, removal, copper cadmium ferrocyanide coprecipitation, condition, copper ion capture, mechanism, adsorption, mixed copper cadmium ferrocyanide

ABSTRACT: The process of coprecipitating copper with simultaneous partial precipitation of the macrocomponent (cadmium ferrocyanide) was studied quantitatively. The effect of the amount and concentration of precipitant, ratio of macro- and microcomponents, and time of aging and temperature was evaluated. When the cadmium concentration is 5 mg/ml and copper is 0.5-2.5 microgm/ml, the copper is precipitated quantitatively with only 2% cadmium. In a 3-stage operation for the quantitative precipitation of copper with the cadmium, less ferrocyanide is required than in a single stage operation. Coprecipitation of copper fails rapidly with increase in cadmium content, and increasing the temperature also

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ACCESSION NR: AP4036973

reduces the coprecipitation of copper. When the amount of $CdSO_4$ in solution exceeds 2 gm/l almost no copper is precipitated. The optimum $K_4Fe(CN)_6$ concentration is 0.01-0.05 M. If the cadmium and copper are freshly coprecipitated, the copper is captured quantitatively by the macrocomponent; on aging 3 hours the amount of copper captured is reduced to zero. It is therefore concluded that pure adsorption is not the mechanism, and that possibly mixed copper-cadmium ferrocyanides are formed. This will require further study. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 15Sep63 DATE ACQ: 05Jun64 ENCL: 00

SUB CODE: GC NO REF SOV: 004 OTHER: 000

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APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4"

"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

KOZLOV, A.S.; DEMKINA, N.I.

Coprecipitation of copper with cadmium ferrocyanide. Zhur. neorg. khim. 9 no.5:1285-1288 My '64. (MIRA 17:9)

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

26

Determination of color. S. L. Shneerson and V. I. Demkina. *Byull. Obmen Opyt. Lakokrasochnoi Prom.* 1939, No. 9, 15.—The following pigments were investigated: chrome orange, chrome yellow, chrome lemon, burned umber, ocher, ultramarines, manganese violet and verdigris. The color of the pigments was measured on the tricolor colorimeter devised by L. Demkina (cf. *C. A.* 32, 1061[1]). Results showed that red, orange and yellow pigments occupy the region λ 570-630 mμ. The color purity varies from 95 to 40%. Blue and green-blue pigments occupy the region λ 480-510 and the purity of their colors varies from 20 to 55%. Manganese violet and artificial blueing occupy the region λ 520-500. Their color purity varies from 15 to 40%. According to P. P. Kondratskii's method films of the following dyes were prepd.: rhodamine, methylene blue, brilliant green and purple. A layer of dyed gelatin is applied on a horizontal piece of glass and after the gelatin dries a piece of smooth paper is glued onto it. The gelatin with the paper is then taken off the glass and is examd. for color and light stability. The least light-stable was brilliant green. David Aelony

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

A photoelectric method of determination of luster of coatings. S. L. Shneerson and V. I. Demkina. *Byull Ommen Opyt. Lakokrasochnoi Prom.* 1940, No. 1, 25.—Luster of coatings is not of esthetic value only; it is also a factor influencing the degree of stability of the film toward atm. At present there is no quant. method of detg. luster. The method proposed is sensitive, objective and can be mastered by technicians without special training. A ray of light reflected from the object under consideration passes through a system of lenses and is collected on the light-sensitive layer of the photoelement, inducing photo-current registered by a galvanometer. The galvanometer hand is set at 0, plate glass at 100 and luster is detd. in percentage of the luster of the plate glass. D. Aelony.

Resins in nitrocellulose lacquers. G. Brenker. *Farbe u. Lack* 1940, 50.—A discussion of the effect of rosin, zelledammar, gum elemi, copal, glyceryl rosin ester, phenol resins, phthalate resins, cyclohexanone resins, urea resins and vinyl acetate resins on the properties of nitrocellulose lacquers. George Ayers

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKINA, V. I., RAFTIAN, G. N.

"Small fields in colorimetry."

Dok. AN, 66, No 5, 1949

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

DEMKIV, B.F. [Demkyv, B.F.]

Age sensibility of animals to oxygen deficiency. Dop. ta pov. L'viv. un. no.7 pt.3:100-102 '57. (MIRA 11:2)
(ANOXEMIA)

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

USSR / Human and Animal Morphology (Normal and Pathological). Nervous System. Central Nervous System. S

Abs Jour : Ref Zhur - Biologiya, No 4, 1959, No. 16910

Author : Demkiv, B. F.
Inst : Not given
Title : Morphological Changes of the Stem Portion of the Cerebrum Under Conditions of Collateral Blood Circulation

Orig Pub : Sb. nauchn. rabot L'vovsk. obl. nauchn. o-vo anatomov, gistolog. i embriol., 1958, vyp 1, 18-20

Abstract : It was shown in experiments on 8 dogs that ligation of the common carotid and vertebral arteries at the neck during the early periods is insignificantly reflected on the nuclear

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"APPROVED FOR RELEASE: 06/12/2000 CIA-RDP86-00513R000310110010-4

USSR / Human and Animal Morphology (Normal and Pathological). Nervous System. Central Nervous System. S

Abs Jour : Ref Zhur - Biologiya, No 4, 1959, No. 16910

structure of the brain stem (diencephalon, mesenciphalon and medulla oblongata). After stabilization of collateral paths, no noticeable changes of the cellular composition and glia of the brain stem were discovered (animals which survived were killed 24 hours to 3½ years after surgery).

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