"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

KEMULA, Wiktor; GRABOWSKI, Zbigniew R.; BARTEL, Ewa Teresa

Polarographic kinetic currents due to the reaction of p-dimethylaminobenzaldehyde with proton donors. Rocz chemii 33 no.4/5:1125-1135 '59. (EEAI 9:9)

1. Katedra Chemii Nieorganicznej Uniwersytetu Warszawa i Zaklad Fizykochemicznych Metod Analitycznych Instytutu Chemii Fizycznej Polskiej Akademii Nauk, Warszawa

(Polarograph and polarography)
(Dimethylaminobenzaldehyde)
(Protons)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

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GRABOWSKI, Zbigniew Ryszard; BARTEL, Ewa Teresa

The influence of the double layer on the kinetics of the proton transfer reactions preceding the electroreduction of some substituted benzaldehydes. Rocz chemii 34 no.2:611-619 '60. (EEAI 10:1)

1. Department of Inorganic Chemistry, University, Warszawa, Laboratory of Physicochemical Methods of Analysis, Institute of Physical Chemistry, Polish Academy of Science, Warszawa.
(Benzaldehyde)
(Polarograph and polarography)
(Protons)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL, Gh.

RUMANIA / Human and Animal Physiology. Blood. Blood Transfusions and Blood Substitutes. T

Abs Jour: Ref Zhur-Biol., No 22, 1958, 101804.

Author : Hadnagy, Cs.; Szabo, St.; Bartel, Gh., Adorjan, E.; Kinda, C.; Rott, L.
Inst : Not given.
Title : Blood Picture in Hemolytic Shock.

Orig Pub: Fiziol. norm. si patol., 1956, 3, No 4, 441-445.

Abstract: Suspensions of human erythrocytes (E) of the group AB were introduced to rabbits and dogs. After 15 min., shock developed, during which the indices of thrombocytes, leucocytes, absolute number of eosinophiles, relative number (by 10-12%) of segmented granulocytes, and ESR decreased, and relative lymphocytosis developed.

Card: 1/1

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HADNAGY, Csaba, dr.; KREPSZ, Ivan, dr.; BARTEL, Gyorgy, dr.; SZABO, Istvan, dr.; KOZMA, Jozsef, dr.

Study on the effect of x-rays on antibody formation. Magy. radiol. 8 no.1:57-59 Feb 56.

1. A Marosvasarhelyi Vertarolo es Veratomlesszto Kozpont (igazgato: Hadnagy Csaba dr. foorvos), a Marosvasarhelyi Orvostudomanyi es Gyogyszereszeti Felso Oktatasu Intezet. Intezet Radiologiai Osztalya (igazgato: Krepsz, Ivan dr. egy. eloado-tanar) kozlemenye.

(ROENTGEN RAYS, eff.
total body on antibody form. in rabbits against sheep erythrocytes, inhib. (Hun))

(ANTIGENS AND ANTIBODIES
antibody form. in rabbits against sheep erythrocytes, inhib. by total body roentgen ray radiation.(Hun))

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

92. DIAGNOSTIC VALUE OF THE HARGRAVES PHENOMENON - Vizsgálatok a Hargraves-jelenség kórjelző értékével kapcsolatosan - Bartel G. and Magyarosi G. Maros Vásárhelyi II sr. Belgyogyaszati Klin. - ORV. HETIL. 1957, 98/37 (1015-1017) Illus. 6

In the bone marrows of 15 cases of subacute bacterial endocarditis (s.b.e.) applying the same techniques as used for the detection of LE cells, a very large number of disintegrated homogenized cellular nuclei were found, but no formation of rosettes nor any other manifestation of phagocytosis. When the serum γ-globulins were reduced to normal values after treatment with antibiotics no disintegration products were observed. The phenomenon was positive also when s.b.e. serum was incubated with normal bone marrow or with normal peripheral blood before treatment and negative after treatment. Thus it is supposed that the Hargraves sign is produced by 2 separate factors, one of them causing the nuclear disintegration and homogenization and the other one promoting the phagocytosis of the elements thus formed. The first factor is supposed to be non-specific and is probably connected to the γ-globulins, as it is regularly found in s.b.e. An association of both factors produces the Hargraves phenomenon which is an incontestably specific diagnostic sign in acute lupus erythematosus. Strasser - Belgrade (VI, 13)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

EXCERPTA MEDICA Sec 6 Vol 13/9 Internal Med Sept 59

4966. THE PATHOMECHANISM OF HARGRAVES' PHENOMENON - Zur Frage des Pathomechanismus des Hargravesschen Phänomens - Bartel G. and Magyarosi G. II. Med. Univ.-Klin., Marosvásárhely, Rumänien - WIEN. MED. WSCHR. 1958, 108/23 (503-504) Illus. 7

Increased nucleolytic activity could be determined after as little as 30 to 60 min. in citrated blood and marrow smears in 20 patients with subacute endocarditis and high γ-globulin content of the serum. The elevated nucleolytic activity could also be transferred to controls; citrated blood or bone marrow of healthy individuals was treated (incubated) with these sera. After the succesful treatment of the subacute sepsis (remission or recovery) this pathological property of the patient's serum disappeared parallel with the reduction in γ-globulin values. The opinion is expressed that Hargraves' phenomenon rests on 2 well-defined processes: nucleolysis and phagocytosis. Both are determined by humoral factors.

It seems that the serum of lupus erythematosus patients contains both factors, while in subacute endocarditis patients only the first factor is present; it seems to be connected to the γ-globulins of the serum. (VI, 13)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL, Gy.; MAGYAROSI, Gy.; WIENER, F.

Cytochemical studies in connection with the appearance of L. E. cells. Magy belorv. arch. 14 no.2:41-44 My '61.

1. A marosvasarhelyi I sz. es II sz. Belgyogyaszati Klinika (Vezeto: Doczy Pal egyetemi tanar, es Horvath Endre egyetemi tanar) valamint a Biologiai tanszek (Vezeto: Szekely Karoly egyetemi tanar) kozlemenye.

(LUPUS ERYTHEMATOSUSUS blood)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL, K.

4 Bartel, Kazimierz. Geometria wykreślna. [Descriptive geometry.] 4th ed. unaltered. Państwowe Wydawnictwo Naukowe, Warsaw, 1958. 427 pp.

3

The first edition of this book was published some forty years ago, with a second edition in 1922 [Książnica Polska, Lwów]. In the third edition (1948), prepared by Antoni Plamitzer, some minor changes were made, but the book remains basically the same as in the second edition. The present fourth edition is a reprint of the third.

10 The book is a comprehensive course in descriptive geometry, including what is called engineering drawing and concluding with the theory of shadows (pp. 382–422). The introductory chapter reminds the reader of the basic theorems (and their proofs) of solid geometry that will be made use of in the text. Throughout the book care is taken to present the theoretical foundations on which are based the solutions of the problems considered. The methods

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL, Ludwik

The fight against corrosion. Pezegl drobn wytwor 12 no.1: 10-11 Ja '62.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL', L.G.

A case of melorheostosis of the bones of the foot. Vest. rent. i rad. 38 no.6:61 N-D '63. (MIRA 17:6)

1. Iz kafedry ortopedii i travmatologii (zav.- prof. L.G. Shkol'nikov) Novokuznetskogo instituta usovershenstvovaniya vrachey.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

SELIVANOV, V.P. (Novokuznetsk, Kemerovskoy oblasti, prospekt Metallurgov, d. 39, kv.130); BARTEL', L.G.

Case of chondroblastoma (Codman's tumor) of the metatarsus. Ortop.,travm. i protez. 25 no.2:65-66 F '64. (MIRA 18:1)

1. Iz kafedry travmatologii o ortopedii (zav. - prof. L.G.Shkol'nikov) Novokuznetskogo instituta usovershenstvovaniya vrachey (rektor - dotsent G.L.Starkov).

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL, R.

RUMANIA/Pharmacology - Toxicology, Adrenergic Agents. U-2

Abs Jour : Ref Zhur - Biol., No 3, 1958, 12879

Author : Simionescu-Carapancea, S., Corneanu, M., Herteanu, H., Bartel, R.

Inst : -

Title : A Study of the Pharmacodynamic Effect of Benzedrine.

Orig Pub : Studii si cercetari fiziol. Acad. PRP, 1956, 1, No 1-2, 99-117.

Abstract : A study of the effects of benzedrine upon the isolated heart, the rectus muscle of the frog, uteri of the guinea pig and rat, the distal segment of the ileum of the guinea pig, and the arteries and adrenocortical secretions of dogs as well as other animals demonstrated that benzedrine had no effect upon the responsiveness of the body to natural vegetotrophic substances. Small doses of benzedrine caused a decrease in cardiac contractions; large doses had positive tonotropic and inotropic actions.

Card 1/2

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

RUMANIA/Pharmacology - Toxicology, Adrenergic Agents. U-2

Abs Jour : Ref Zhur - Biol., No 3, 1958, 12879

In dogs benzedrine caused a decrease in blood pressure but had no effect upon blood pressure changes caused by adrenalin or acetylcholine. A subdural injection of benzedrine caused convulsions, fibrillary twitchings, midriasis and, at times, exophthalmos. The administration of medium-sized doses of benzedrine to female rats caused hypertrophy of the ovaries and uterus and prolonged estrus. Large doses caused somnolence, anorexia, loss of weight, atrophy of the ovaries and uterus and the disappearance of estrus.

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

RAICIULESCU, N.; BITTMAN, E.; BARTEL, R.

Studies on some pharmacodynamic properties of hydroxyzine (atarax). Acta physiol. hung. 15 no.2:201-215 1959.

1. (Institut de Physiologie Normale et Pathologique Prof. Dr. D. Danielopolu de l'Academie de la Republique populaire Roumaine, Bucarest.

(TRANQUILIZING AGENTS
hydroxyzine, pharmacodynamics (Fr))

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL, Ryszard, mgr., inz.

A visual method for teaching descriptive geometry. Przegl mech 20 no.22:688-690 '61.

1. Politechnika Warszawska.

(Geometry, Descriptive)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL', Ryshard [Bartel, R.], inzh.

Visual aid for studying descriptive geometry. Izv.vys.ucheb. zav.; mashinostr. no.4:161-166 '62. (MIRA 15:7)

1. Varshavskiy politekhnicheskiy institut.
(Geometry, Descriptive—Study and teaching)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL, Ryszard

Growth and feeding habits of lake trout (Salmo trutta morpha lacustris L.) in Lake Smolnik. Rocz nauk roln zootechn 84 no.2:255-271 '64.

1. Laboratory of River Farming of the Institute of Inland Water Fisheries, Warsaw.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

POLAND/Electronics - Electron and Ion Emissions.

Abs Jour : Ref Zhur - Fizika, No 6, 1959, 13448

Author : Bartela, M., Szczerski, W., Taczanowski, A.

Inst : Physics Institute, Vacuum tube, PIE, Poland.

Title : Sintered Cathode of High Yield.

Orig Pub : Elektronika, 1958, 4, No 4-5, 173-174.

Abstract : Description of several experiments with sintered cathodes, made of a mixture of powders of nickel and carbonates of barium and strontium. The results are preliminary in nature.

Card 1/1

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

MATEJAK, L., mgr inz.; BARTELAK, M., mgr; SOSNA, J., mgr; KLOBUKOWSKI, J., mgr inz.; ZUKOWSKI, J., mgr

Sanitary state of the Wilga River. Gaz woda techn sanit 37 no.11:350-352 N '63.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

[illegible]

22100 Bartel's, A.V. Penitsillinoterapiya poslerodovykh i posleabovtnykh septicheskikh zabolevaniy. V. sb: Penitsillinoterapiya. M., 1949, 176-92

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

DARTEL'S, A. V.

"Review of Prof. S. B. Golubchin's Book 'Handbook on Obstetrics and Gynecology for Doctors and Students,'" Akusher i Gin., No.1, 1949

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A. V.

"Review of A. L. Kaplan's 'Textbook of Obstetrics and Gynecology for Medical Sisters' Schools," Akusher i Gin., No.3, 1949

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A. V.

62/49T36

USSR/Medicine - Ionophoresis Jul/Aug 49
Medicine - Instruments

"Wooden Electrodes for Vaginal and Intracervical Galvanoionization," A. V. Bartel's, G. A. Kellat, Chair of Obstetrics and Gynecol, First Moscow Order of Lenin Med Inst, Inst of Obstetrics and Gynecol, Min of Pub Health USSR, 3½ pp

"Akusher i Ginekol" No 4

Used saturated wood as a conductor. Best types are linden, aspen, birch, maple, and beech. Shows various forms. Each patient can have an individual electrode for each course of treatments as construction is simple and cheap.

[redacted] 62/49T36

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A. V.

"Discussion on N. V. Zhilov's Article 'Method of Evisceration in Neglected Transverse Presentation,'" Akush. i gin., No.2, 1952

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

ALEKSANDROV, N.I.; BARTEL'S, A.V.

Survey of activities of branches of the All-Union Scientific Society of Obstetricians and Gynecologists in 1952. Akush.i gin. no.1:79-92 Ja-F '54. (MLRA 7:6)

(Gynecology) (Obstetrics)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

MALINOVSKIY, Mikhail Sergeyevich, professor; BARTEL'S,A.V., redaktor; POPRYADUKHIN,K.A., tekhnicheskiy redaktor

[Surgical obstetrics; manual for students and physicians] Operativnoe akusherstvo; rukovodstvo dlia studentov i vrachei. Moskva, Gos.izd-vo meditsinskoi lit-ry, 1955. 454 p. (MLRA 9:2)
(OBSTETRICS--SURGERY)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A.V.; GRANAT, N.Ye. (Moskva)

Physical culture during puerperium. Fel'd. i akush. 21 no.12:21-29 D '56. (MIRA 10:1)

(PUERPERIUM) (EXERCISE)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A.V.

"Textbook of obstetrics (for medical schools)" by B.I. Bodiazhina. Reviewed by A.V. Bartel's. Sov. med. 22 no.12:136-137 D '58. (MIRA 12:1)
(OBSTETRICS) (BODIAZHINA, B.I.)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A.V.; GRANAT, N.Ye.; NOGINA, O.P.; SALGANNIK, G.M. [deceased]; SMIRNOV, G.I.; STEPANOV, L.G.; KHANOVA, T.M., red.; YANKELEVICH, Ye.I., red.; GABERLAND, M.I., tekhn.red.

[Lecture course for pregnant women] Kurs lektsii dlia beremennykh zhenshchin. Pod red. L.G.Stepanova. Izd.3. Moskva, Medgiz, 1959. 231 p. (MIRA 12:8)

1. Nauchno-issledovatel'skiy institut akusherstva i ginekologii Ministerstva zdravookhraneniya RSFSR (for all except Khanova, Yankelevich, Gaberland). 2. Direktor Nauchno-issledovatel'skogo instituta akusherstva i ginekologii Ministerstva zdravookhraneniya RSFSR (for Stepanov).
(PRENATAL CARE)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A.V.

Late postpartum hemorrhages. Akush. i gin. 36 no.2:21-27 Mr-Ap '60. (MIRA 13:12)

(HEMORRHAGE) (PUERPERIUM)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A. V., dotsent; RAFAL'KES, S. B., dotsent; KHASKIN, S. G., prof.

Prevention and treatment of lactation mastitis. Akush. i gin. no.2:3-25 '62. (MIRA 15:6)

(BREAST—DISEASES) (LACTATION)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A.V., dotsent

Discovery bringing the gift of life. Zdorov'e 9 no.2:28 F '63. (MIRA 16:3)

(PUERPERAL SEPTICEMIA)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A.V.; LEBEDEVA, M.A.; GRASHCHENKOVA, Z.P.; FOMCHENKO, I.V.

Use of staphylococcal anatoxin in the treatment of mastitis. Akush. i gin. 40 no.1:17-21 Ja-F '64. (MIRA 17:8)

1. Nauchno-issledovatel'skiy institut akusherstva i ginekologii (dir. - prof. O.V. Makeyeva) Ministerstva zdravookhraneniya SSSR, Moskva.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, A.V., dotsent; GRASHCHENKOVA, Z.P.

Prevention of severe puerperal infection. Akush. i gin. 40 no.5: 80-85 S-O '64. (MIRA 18:5)

1. Institut akusherstva i ginekologii (dir. - prof. O.V.Makeyeva) Ministerstva zdravookhraneniya SSSR, Moskva.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTHA, G.

Phase shift in solar daily variation of cosmic radiation, p. 144, IDOJARAS, (Meteorological Intezet es Magyar Meteorologiai Tarsasag) Budapest, Vol. 60, No. 3, May/June 1956

SOURCE: East European Accessions List (EEAL) Library of Congress, Vol. 5, No. 11, November 1956

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTEL'S, G.

Spectra of the optically dense plasma. Izv. AN S.S.S.R. Ser. fiz. 22, no. 6:742-748 Je '58. (MIRA 11:7)

1. Fizicheskiy institut Vysshey tekhnicheskoy shkoly, Gannover, Federativnaya Respublika Germanii.
(Gases, Ionized--Spectra)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

Barten, A. "In the Krasnyy treugol'nik" [The Red Triangle], (Summary), Zvezda, 1948, No. 12, p. 158-64.

SO: U-2838, 12 Feb. 53, (Letopis' Zhurnal 'nykh Statey, No. 2, 1949).

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENBACH, B.

Movement of patients and treatment in tuberculous sanatoria in 1947, 1948 and 1949. Gruzlica, Warszawa 18 no.2:388-390 Apr-June 1950. (CLML 20:7)

1. Of the Ministry of Health.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENBACH, B.

Skibinski's circulatory-respiratory coefficient in determination of working capacity in tuberculosis. Gruzlica 21 no.3:255-258 Mar 1953. (CLML 24:5)

1. Of the Institute of Tuberculosis (Director--Prof. J. Misiewicz, M.D.), Warsaw.

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENBACH, Boleslaw

Basal metabolism rate determination in pulmonary tuberculosis by means of Habs' nomogram. Gruzlica 23 no.2:127-129 Feb '55.
(BASAL METABOLISM, determination
Hab's nomogram method in pulm.tuberc.)
(TUBERCULOSIS, PULMONARY, metabolism
basal metab.rate determ,Habs' nomogram method)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENBACH, B.

. Evaluation of James effort test (James box text). Gruzlica 24 no.12:1221-1223 Dec 56.

(RESPIRATION, function tests,
James box test (Pol))

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

POLAND/Electricity - Semiconductors. G

Abs Jour : Ref Zhur Fizika, No 11, 1959, 25349

Author : Bartenbach, M., Buras, B., Rzewuski, H., Tomczak, Z.

Inst : Institute of Nuclear Research, Polish Academy of Sciences Warsaw

Title : Study Stimulation and Quenching of Photoconductivity in Cadmium Sulfide by Infrared Radiation

Orig Pub : Acta phys. polon., 1958, 17, No 6, 389-395

Abstract : An investigation is made of the dependence of the effect of quenching of photoconductivity in CdS crystals on the ratio of the intensity of the source of excitation of photocurrent to the intensity of the infrared light. At small intensity of the exciting light, illumination with infrared causes a photocurrent to flow. At a definite ratio of intensity of the exciting light and intensity

Card 1/2

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POLAND/Electricity - Semiconductors. G

Abs Jour : Ref Zhur Fizika, No 11, 1959, 25349

of the infrared light, there are no changes in the photocurrent upon illumination with infrared. If this ratio is greater than the last quantity, quenching of the photoconductivity takes place. A similar dependence is observed for different wave lengths of the exciting light and the infrared light, greater than 0.7 microns. When using x-rays for excitation, similar effects are also observed. The results can be explained on the basis of the model proposed by Rose (Referat Zhur Fizika, 1956, No 2, 4390), in which it is suggested that free holes are produced when the photoconductor is illuminated with infrared, and by assuming that the photocurrent due to the infrared is connected only with the holes. Theoretical calculations are given, based on these assumptions, which agree with the experimental data. Bibliography, 9 titles.

Card 2/2

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81746

S/089/60/008/05/05/008
B006/B056

21.8200

AUTHORS: Aleksandrovich, Ye., Bartenbakh, M.

TITLE: Measurement of Fast-neutron Flux Distribution in the Core of the BBR-C (VVR-S) Reactor by Means of the Conductivity Change in Germanium Samples

PERIODICAL: Atomnaya energiya, 1960, Vol. 8, No. 5, pp. 451 - 452

TEXT: By using an n-type germanium single crystal, the authors measured the neutron flux distribution in the reactor core, and gave a brief report on the method employed and the results obtained. The conductivity of the n-type crystal was reduced by fast-neutron irradiation and, finally, passed over into a p-type crystal. Such a typical time-dependent change of conductivity σ is shown in Fig. 1. The first part of this (asymmetric) distribution curve is representable by means of a straight line, especially when neutron energy exceeds $\sim$300 ev. Nine germanium samples (single crystals having the shape of parallelepipeds) with the highest possible values of conductivity were used for the measurements. In order to eliminate the influence exerted by thermal neutrons, the

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

Measurement of Fast-neutron Flux Distribution in the Core of the BBR-C (VVR-S) Reactor by Means of the Conductivity Change in Germanium Samples

81746
S/089/60/008/05/05/008
B006/B056

samples were enclosed in a 0.25 mm thick Cd container. They were arranged at equal distances from one another in an aluminum probe and introduced into the reactor core. Seven samples were arranged along the perpendicular axis of the core, but two of them were outside the active zone, one above and the other below the core. The reactor power was constantly kept at 1.5 kw during the measurements. Fig. 2 shows the change in σ during the irradiation for all nine samples. After one and two hours the probe in the reactor was somewhat shifted, which manifests itself by breaks of the curves. From the slope of the curve it is possible to determine the fast-neutron flux at the place of the sample. Fig. 3 shows the resulting flux distribution along the core axis. This method is suited also for absolute measurements. There are 3 figures and 7 non-Soviet references.

ASSOCIATION: Institut yadernykh issledovaniy Pol'skoy akademii nauk, Varshava (Institute of Nuclear Research of the Polish Academy of Sciences, Warsaw)

SUBMITTED: December 28, 1959

Card 2/2

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

S/262/62/000/024/001/007
A154/A126

AUTHORS: Bartenbach, Maria, Tomczak, Zenon, Kołodziejczak, Jerzy

TITLE: In-pile thermoelectric power measurements of germanium bombarded by fast neutrons

PERIODICAL: Referativnyy zhurnal, Silovyye ustanovki, no. 24, 1962, 4, abstract 42.24.37 (Rept. Inst. badań jądrow. PAN, 1962, no. 318/1-B, 10 pp, ill.; English; summaries in Polish and Russian)

TEXT: The thermoelectric index and electrical resistance of germanium close to its intrinsic conductance were measured during fast neutron bombardment in the Świerk nuclear reactor. By comparison of the experimental and theoretical data the dependence of the thermoelectric index on the irradiation time was found. The obtained data point to the existence of four energy minima in the conductance band of germanium. There are 4 figures, 1 table and 9 references.

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

S/058/63/000/002/054/070
A160/A101

AUTHORS: Bartenbach, Maria, Tomczak, Zenon, Kołodziejczak, Jerzy

TITLE: The measurement of the thermo-emf of germanium bombarded by fast neutrons in a reactor

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 88, abstract 2E588 ("Rept. Inst. badań jądrow. PAN", no. 318/I-B, 1962, 10 pp., illust., English; summaries in Polish and Russian)

TEXT: Simultaneous measurements were carried out of the thermo-emf and of the electric resistance near the natural conductivity in Ge subjected to bombarding by fast neutrons in a reactor. The dependence of the thermo-emf on the irradiation time was calculated and compared with the experiment on the basis of the experimental dependence of the electric conductivity on the irradiation time, and also on the basis of the thermo-emf theory. Obtained were some confirmations of the assumption regarding the presence of four minima in the conductivity zone of Ge.

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

S/058/63/000/002/055/070
A160/A101

AUTHORS: Buras, Bronisław, Bartenbach, Maria, Suwalski, Jan, Tomczak, Zenon

TITLE: An investigation of the radiation defects as a method for studying the electric conductivity, the Hall coefficient and the thermo-emf of germanium as a function of carrier concentration

PERIODICAL: Referativnyy zhurnal, Fizika, no. 2, 1963, 88, abstract 2E589 ("Rept. Inst. badań jądrow. PAN", no. 314/I-B, 1962, 15 pp., illust., English; summaries in Polish and Russian)

TEXT: Measurements were carried out of the electric conductivity, of the Hall coefficient and of the thermo-emf of Ge (irradiated in a reactor) in the region of the natural conductivity as a function of the concentration of current carriers. The experimental results were compared to the calculated ones. Calculated were the concentration and the mobility of light holes. The results confirm the assumption regarding the presence of four minima in the conductivity zone of Ge.

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

S/275/63/000/003/007/021
A052/A126

AUTHORS: Buras Bronisław, Bartenbach Maria, Suwalski Jan, Tomczak Zenon

TITLE: Radiation damage as a method for studying electric conductivity, Hall coefficient and thermoelectric power of germanium as functions of carrier concentration

PERIODICAL: Referativnyy zhurnal, Elektronika i yeye primeneniye, no. 3, 1963, 4, abstract 3B28 (Rept. Inst. badan jadrow. PAN, 1962, no. 314/1-B, 15 pp, ill.) (English: summaries in Polish and Russian)

TEXT: Electric conductivity, Hall coefficient and thermoelectric power were studied directly in the process of Ge irradiation with a fast neutron flux. The dependence of the intensity of these characteristics on the exposure period were taken. The data obtained refer to the same sample and to a fixed temperature. A comparison of experimental data with theoretical calculations, based on the assumption that in the transfer phenomena 3 types of carriers (electrons, ordinary and light holes) play an equal part, revealed good agreement. Moreover, based on the data obtained it was

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possible to compute concentrations and mobilities of light holes and to obtain an additional argument in favor of the number of minima in the conductivity zone of Ge being 4. The experimental installation is described in detail. There are 17 references.

I.A.

[Abstracter's note: Complete translation.]

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENBACH, M.; TOMCZAK, Z.

In-pile thermoelectric power measurements of germanium bombarded by fast neutrons. Acta physica Pol 23 no.2:189-195 F '63.

1. Institute of Nuclear Research, Warsaw (for Bartenbach and Tomczak). 2. Institute of Physics, Polish Academy of Sciences, Warsaw (for Kolodziejczak).

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, A.G.

Modernizing Linnik's microinterferometer in order to check the planeness of micromirrors. Opt.-mekh. prom. 25 no. 2:38-40 F '58. (MIRA 11:7)

(Interferometer)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

USSR / General and Specialized Zoology. Systematic and Faunistic. P

Jour : Ref Zhur - Biol., No 17, 1958, No 78158

Author : Bartenev, A. N.
Inst : Far Eastern Branch AS USSR

Title : Contributions to the Fauna of the Odonata in the Far East (Insecta, Odonata).

Orig Pub : Tr. Dalnevost. fil. AN SSSR, ser. zool., 1956, 3 (6), 201-238

Abstract : Annotated checklist of 32 species; described are Gomphus chancae sp. n., male G. anormolobatus Bart., Dentichemis bicolor g.n., sp.n., Agrion brevicauda sp.n., A. striatum sp.n., A. amurense sp.n., A. antiquum sp.n., A. tugur sp.n. Redescription of the male Sieboldius albardae Selys. Key for the identification of the varieties of Sympetrum flaveolum flaveolum L. Bibl. 25 names. -- Z. D. Spuris.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

PROKOF'YEV, V.I., mashinist-instruktor; BARTENEV, A.V., mashinist

Advice to the operator of the VMEL switcher locomotive. Elek. i tepl. tiaga 7 no.9:36 S '63. (MIRA 16:10)

1. Depo Leningrad-Varshavskiy.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, D. I.: Master Agric Sci (diss) -- "Cultivating safflower in western Kazakhstan". Ural'sk, 1958. 19 pp (Min Higher Educ USSR, Saratov Agric Inst), 250 copies (KL, No 7, 1959, 127)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

LAY, Ya.; BARTENEV, F., agronom; ROGOZHKIN, A., inzh.

For general use of electric equipment. Nauka i pered. op v sel'khoz 9 no.5:1-5 My '59. (MIRA 12:8)

1. Predsedatel' kolkhoza im. Stalina, Bykovskogo rayona, Stalingradskoy oblasti (for Lay)
(Electricity in agriculture)

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, F.

Helping rural innovators. Izobr. i rats. no.11:13 N '60.
(MIRA 13:10)

1. Agronom-organizator otdela zemleustroystva oblastnogo upravleniya sel'skogo khozyaystva, g. Stalingrad.
(Stalingrad Province--Agricultural machinery)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

TOPLIN, Ye.K.; BARTENEV, F.I.

Latent resouces of socialist agriculture in Stalingrad Province. Zemledelie 6 no.6:65-68 Je '58. (MIRA 11:6)

1. Stalingradskoye oblastnoye upravleniye sel'skogo khozyaystva.
(Stalingrad Province—Field crops)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, F.I.

Early deep fall-plowed planed fields increases the crop yields. Zemledelie 25 no.7:36-37 Jl '63. (MIRA 16:9)

1. Starshiy agronom Volgogradskoy zemleustroitel'noy ekspeditsii. (Plowing) (Crop yields)

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

PROCESSES AND PROPERTIES INDEX

"Determination of the Heat Capacity of Metals by the Method of Quenching. Ya. A. Turovsky and G. M. Bartenev (*Zhur. Tekhn. Fiziki*, 1940, 10, (6), 514–524).—[In Russian.] A comparative method is proposed by means of which the temperature relation of heat capacity can be quickly determined in the range 300°–1000° C. The method was confirmed in respect of copper, using tungsten as standard.—N. A.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Heat of transformation in carbon steels. Ya. A. Turovskii and G. M. Bartenev. *J. Tech. Phys.* (U. S. S. R.) 10, 1986-92(1940); cf. C. A. 34, 2762[9].—A method is devised for accurately detg. the heat of transformation from the sp.-heat curve in the temp. interval near c_p maximum, where transformation presumably takes place. If the beginning and end of transformation occur at $T_1°$ and $T_2°$ then the heat content in this interval is: $E_1 = Q_2 - Q_1 = \int_{T_1}^{T_2} c_p dT$, where c_p is the observed specific heat in this interval. If there were no max., the heat content would be $E_2 = \int_{T_1}^{T_2} c_{p_0} dT$, where c_{p_0} would be the "theoretical" sp. heat in this interval. This difference between the observed and the theoretical heat content is due to the heat involved in the transformation of steel. Hence the heat of transformation is given by $q = E_1 - E_2 = \int_{T_1}^{T_2} (c_p - c_{p_0}) dT$. For actual calcns. the c_p value must be expressed as function of $T°$ by means of some empirical equation, while the c_{p_0} values must be obtained by interpolation between some two points of the observed $c_p(T)$ curve lying in the normal regions on each side around the max. If superimposed, the two curves will coincide, except for the area around the max., which is equivalent to the heat of transformation. The heat of transformation increases with increased C content, but the max. falls on the eutectoid steel. Other elements also affect the value of q to some extent. The presence of a max. in the $c_p(T)$ curve can always indicate the presence of an internal transformation, the abnormal course being due to the heat of transformation superimposed on the regular (normal) $c_p(T)$ curve. An analogy between steel transformations and melting is pointed out. In both cases destruction of a lattice and its rebuilding into another lattice (steel), or another array (liquid) is accompanied by heat effect. But, while for steel the temp. interval is wide, for melting it is vanishingly small. Yet c_p near the m. p. is known to rise very sharply for ice. By supplying only slightly above 80 cals. to ice near the m. p., in view of the tremendous rise in c_p (ice), the m. p. is just about reached. This is why melting does not take place in such instances exactly at the melting point. The real cause is the presence of the c_p max. and not the superheated condition of ice. 14 references.

C. S. Shapiro

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, G. M. Dr. Chem. Sci.

Dissertation: "Theory of Phase Fluctuations and its applications to Molecular Systems." Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleyev, 11 Jun 47.

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

APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0"

"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, G. M.

USSR/Physics
Lamps, Mercury
Radiation - Measurements

Dec 1947

"A Simple Method of Controlling the Constancy of Radiation of Mercury-quartz Lamps," G. M. Bartenev, P. S. Modestov, Scientific Research Institute of the Rubber Industry, 1½ pp

"Zavodskaya Laboratoriya" Vol XIII, No 12

Tests were made of the constancy of radiation of mercury-quartz lamps of the PRK-2 (Electrozavod) type. Two methods of controlling the constancy were chosen for their simplicity and dependability of results: a spectroscope and photometric key method and a method using a photoelement and light filters. The results of the experiments with these two methods are presented graphically.

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12

B

Heat Capacity of Low-Melting Metals in the Solid and Molten States. (In Russian.) G. M. Bartenev. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 17, Nov. 1947, p. 1321-1324.

Gives results of a determination from heating and cooling curves of the heat capacity of Pb and Sn in both states and in the melting point regions. Discusses the phenomenon of anomalous heat capacity of Sn at 166°C.

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

13

12

Heat of Fusion of Tin, Lead, and Their Eutectics. (In Russian.) G. M. Bartenev. *Zhurnal Tekhnicheskoi Fiziki* (Journal of Technical Physics), v. 17, Nov. 1947, p. 1325-1330.

Describes a method for determination of heat of fusion from the coefficient of heat exchange and its application to the above. Results are discussed in connection with establishment of the structure of liquid eutectics.

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CA

19

Control of strains in sheet glass. G. M. Bartenev and S. G. Liosayanskaya. *Steklo i Keram.* 5, No. 2, 7-8 (1948).—The use of a Russian-made polarimeter-polariscope for measuring residual strains is described. The app. can be equipped with either a Senarmon or Berek compensator. The Senarmon compensator is a birefracting plate in a quarter wave length of white light—135 mμ. The Berek compensator consists of a thin plate of calcite cut perpendicular to the optical axis of the crystal. Results with both compensators are close for a glass thickness of 2 to 20 mm. When the Senarmon compensator is used, a green-light filter should be employed with max. passage of light for a wave length of 540 mμ.

B. Z. Kamich

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

C

5

Controlling the tempering of large glass sheets. G. M. BARTENEV. *Stekło i Keram.*, 5 [11] 18-19 (1948).—In some cases, the considerable light absorption and large linear dimensions of such shapes as automobile glass make it impossible to apply ordinary means of controlling the quality of tempered shapes by the optical method. In such cases, a control shape is employed which has the same thickness but much smaller linear dimensions than the shapes being tempered. The linear dimension of control shapes is not less than 4 times the thickness. To eliminate edge effects, the control shape is mounted in a protective frame and then tempered together with the production shapes.

B Z K.

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30

Studies on the vulcanization of rubber. VI. Variation of the modulus of two-dimensional extension caused by vulcanization of natural and butadiene-styrene rubbers. B. Dogadkin, G. Bartenev, and N. Novikova. *Kolloid. Zhur.* 10, 94-100(1948); cf. *C.A.* 43, 5622*d*.—Rubber membranes were extended by unilateral pressure. When the stress in the membrane increased, the ratio (area of extended membrane): (original area) increased first gradually, then very rapidly, and finally slowly again. The stress corresponding to the rapid rise is G (modulus of two-dimensional extension); S = percentage of S. With increase in combined S, G increased linearly to a max. (3.[illegible] kg./sq. cm. at S = 1.8%), then dropped sharply for natural rubber (I); it increased linearly to a plateau (about 3.9 kg./sq. cm. at S = 1.4 to 2.4%), then increased more steeply again for Buna-S (II). S was varied by varying the time of vulcanization (10-100 min. at 142-144°) of the 2 mixts: (1) smoked sheet 100, S 2, ZnO 5, stearic acid 2, mercaptobenzothiazole (III) 0.6, and (2) II 100, S 3, Zn stearate 2, III 1. Along the linear parts of the G - S curves, $dG/dS = 2kT\nu/3200$; where ν is d. of the vulcanizate, γ is the fraction of S acting as bridges. γ = 0.19 for I, in agreement with chem. detn. For II, γ = 0.76, and is greater than detd. chemically; this shows that there are links contg. no S. At high S, the drop of G of I and its rise in II are due to oxidation. **VII. Effect of organic accelerators on the kinetics of vulcanization and properties of vulcanizates from natural rubber.** B. Dogadkin, B. Karmin, A. Dobromyslova, and L. Saporzhkova. *Ibid.* 268-80.—When rubber is heated with less than 3% S for t min. in air, its tensile strength $\pi = \pi_0[1 + aS_0(1-e^{-kt})][1 - bO_0(1 - e^{-kt})]$, where S_0 and O_0 are S and O, resp., finally taken up, k_1 and k_2 the consts. of these addn. reactions, and a and b show the effect of these addns. on π. The final tensile strength π_0 is independent of k_1 and k_2. Accelerators like diphenylguanidine (I), mercaptobenzothiazole (II) or tetramethylthiuram disulfide (III), added in the amt. of 0.6-0.9 parts to smoked sheet rubber 100, S 2, ZnO 5, and stearic acid 2 parts, affect π_0, i.e., change also a and b in addn. to k_1 and k_2. The increase in π_0 and the reduction of swelling in CCl_4 increase in the order I < II < III. From vulcanization expts. at 127°, 133°, 143°, and 153°, the temp. coeff. of k_1 is calcd. It agrees with the const. calcd. from direct measurements of the combined S at different t, this shows that k_1 has the assumed meaning. Films of crude rubber + accelerator were exposed to O at 100-142°. II accelerates, and I and III strongly retard, oxidation. The temp. coeff. of oxidation in the presence of II, detd. directly, agrees with that of k_2. At a given degree of oxidation, rubber contg. II has a lower viscosity in soln. than without accelerator. The highest π reached during vulcanization increases with its temp. in the presence of III, decreases on temp. increase for II (because II accelerates oxidation), and is independent of temp. for I. Reaction of vulcanized rubber or Na butadiene polymer with MeI shows that the percentage of S present as monosulfide bonds is raised by I and II. J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

CA

12

The phenomenon of quenching of glass. G. M. Bartenev. *Zhur. Tekh. Fiz.* 18, 383-8(1948).—The theory of the distribution of the residual stresses over the thickness of a glass plate quenched from a temp. T_0 above the vitrification temp. T_g is developed on the basis of Newton's cooling law, on the idealized assumption that the stresses are dissipated instantaneously above T_g and not at all below T_g. The distribution is close to cosinusoidal. Exptl. detns. of distribution of stress were made by measurements of birefringence, taken as proportional to stress, for different $T_0 > T_g$, on a glass plate 2.12 cm. thick. In the middle of the plate, the stress becomes independent of T_0 approx. above $T_0 > 600°$, and drops rapidly to zero as T_0 approaches T_g. The exptl. thickness of the inner "neutral" layer a_0 where the stress is zero, at $T_0 = 620°$, is found $a_0 = 0.570a$ (where a = half thickness of the plate) in agreement with the theoretically calcd. $0.578 > (a_0/a) > 0.563$. The exptl. ratio of the stress at the surface and at the middle was 1.92, in agreement with the theoretical limits 1.75-2.0. N. T.

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BARTENEV, G. M.

SA

A 53
55

539.38

2763. Mechanical properties of vulcanized butadiene-styrol rubber in two-dimensional deformation. BARTENEV, G. M., DOGADKIN, B. A. AND NIWIKOWA, N. M. *J. Tech. Phys., USSR*, 18, 1283–9 (*Oct.*, 1948) *In Russian.*—It is shown that in the 2-dimensional tensile stress case the higher theory of elasticity finds a wider scope of application than in the case of linear tension; this is due to "mechanical vulcanization" reducing the plasticity of the material. On stressing, a disruption of the local secondary bonds takes place, leading to irreversibility of contraction. The best opportunity of applying higher elasticity methods to 2-dimensional tension arises for rubbers containing < 1·5% S.

B. F. E.

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

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USSR/Chemistry - Heat Capacity May 1948
Chemistry - Melting Points

"Theory of Anomalous Phenomena Near Melting Points," G. M. Bartenev, Phys Lab, Sci Res Inst of Rubber Industry, 4 pp

"Zhur Fiz Khim" Vol XXII, No 5

Summarizes results of previous observers in this field. Anomalous increases of specific heats near melting points have been observed in many solids (yellow phosphorus, ice, tin, stearin, etc.) and formerly were attributed incorrectly to presence of impurities. In author's opinion, they are due to phase fluctuations and, by considering coefficient of cubical expansion and specific heat as additive quantities, equations are obtained which enable thermodynamic potential near melting point to be calculated. Method is applied to coefficient of expansion of zinc and curve thus produced agrees very closely with experimental one. Submitted 30 Jul 1947.

68T26

BARTENEV, G. M.

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BARTENEV, G.

1ST AND 2ND ORDERS — 3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Theory of the mechanical strengthening of glass by annealing. G. Bartenev. *Doklady Akad. Nauk S.S.S.R.*, 60 [2] 257-60 (1948).—In analyzing the annealing process as applicable to a plate of glass, the following assumptions are made: (1) T_g, the temperature region within which the material changes sharply from the plastic to the nonplastic condition, is considered a temperature point, and (2) below the point T_g the inner stresses diffuse, but above T_g they diffuse almost instantaneously. When a plate is heated above T_g and subjected to uniform cooling on both sides, the distribution of temperatures, T, will become different and will correspond to some even function of the coordinate, x (origin in the middle of the plate). Thermoelastic stresses will occur in the plate. Above T_g, the thermoelastic stresses which occurred in the initial moment disappear rapidly because of the plastic shifts. As a result, the intermolecular distances in the isothermal layers of the plate become equal to the normal distances corresponding to the temperature in each layer. The density will increase in the outer layers and decrease in the inner layers. When T_g is reached during cooling, the plate begins to enter the nonplastic region; in those parts of the plate where the temperature distribution curve already lies below T_g, plastic shifts are impossible and the mutual position of the molecules is fixed. In these parts of the plate there should occur constant elastic stresses when there is an equalization of temperature. When the plate reaches the temperature of the medium, the distribution of the elastic stresses corresponds exactly to the distribution of the thermoelastic stresses but has an opposite sign. The distribution of the elastic stresses, $f(x)$, follows: $f(x) = \frac{\beta E}{1-\sigma} T_g \ln \cos \frac{\delta_1 x}{a} + c$, where c is a constant determined by the relative coefficient of heat exchange, h. This law was checked by annealing in air a plate of Foureault glass having a thickness of $2a = 1.61$ cm. and a composition of SiO_2 71.3, Al_2O_3 0.5, CaO 7.9, MgO 3.0, Na_2O 15.2, K_2O 1.5, SO_3 0.4, and As_2O_3 0.2%. T_g for this glass was 530°C. The stress distribution was measured by double refraction. Relative coefficient of heat exchange, h, was determined for this case from other experiments; $h = 0.44$ cm.$^{-1}$ and $\delta_1 = 0.55$. The experimental value of $\frac{\beta E}{1-\sigma}$ was 7.2 kg./cm. degree, and the calculated value was 7.8 kg./cm. degree.

B.Z.K.

COMMON ELEMENTS — OPEN — MATERIALS INDEX — TABLES INDEX

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FE GROUPS — 3RD AND 4TH ORDERS — 2ND LETTER — 1ST AND 2ND LETTER

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, G. M.

Chemical Abst.
Vol. 48
Apr. 10, 1954
General and Physical Chemistry

Heat capacity of tin and lead alloys. G. M. Bartenev. *Uchenye Zapiski Moskov. Gosudarst. Univ. im. M. V. Lomonosova* No. 134, *Fiz.* No. 5, 126-33(1949); cf. preceding abstr.—Heat capacities were detd. from heating and cooling curves for alloys contg. (1) Pb 38.0, Sn 62.0 (50-250°); (2) Pb 72.4, Sn 27.6 (50-300°); and (3) Pb 89.9, Sn 10.1% (50-300°). At 50° the exptl. values ranged from 2% less to 9% greater than values calcd. by Kopp's law; at 100° the exptl. values ranged up to 13% greater. Breaks in the heat-capacity curve indicated that the eutectic contained 30.9% Pb (25.05 at. % Pb). H. W. K.

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BARTINEV G. M.

K[illegible] of highly elastic deformation [illegible]

rubberlike substances. Relaxation curves at const. deformation and deformation curves at const. rate afford the methods for detn. of the consts. of the equations. Natural and synthetic vulcanized rubbers show agreement with the above equation. Energy of activation U of the elementary transformation that composes the relaxation phenomenon is 15-17 kcal./mole; the vol. of the kinetic element of relaxation at 22° and 100% elongation is 100,000 cu.A.

G. M. Kosolapoff

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

BARTENEV, G. M.

Theory of highly elastic deformation of rubber. G. M. Bartenev (M. V. Lomonosov Inst. Fine Chem. Technol. Moscow). *Issledovaniya i Oblasti Vysokomolekul. Soedinenii. Doklady 6-oi Konf. Vysokomolekul. Soedinenyam, Akad. Nauk S.S.S.R.* 1949, 305-14.—The current theories of elasticity of rubber are reviewed (cf. Wall, *C.A.* 36, 5408[8]; Guth and James, *C.A.* 35, 6148[3]; 37, 6930[1]). Vector analysis of the phenomena that probably take place in rubber at high levels of elongation is made, and the results are summarized in the equation: $\lambda = 2L_1(p\sigma/kT) + (\lambda_\infty - 2)L(p\sigma/kT)$, where L is Langevin's function $L(x) = \coth x - (1/x)$; $L_1(x) = e^x/e^x - 1 - 1/x$, p is the link moment, δ is stress, and λ is the relative length of the specimen after elongation. This formula gave much better agreement with exptl. results on Hycar and Buna-S rubbers above 350% elongation than did the formula proposed by Wall and Guth.

G. M. Kosolapoff

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

B

22

Theory of Annealing of Glass. (In Russian.) G. M. Bartenev. *Steklo i Keramika* (Glass and Ceramics), v 6, May 1949, p. 7-12.

Presents results of theoretical and experimental investigation. Data are tabulated and graphed.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

30718. BARTENEV, G. M.

Teplovoye rasshireniye vblizi tochek plavleniya. Zhurnal fiz. khimii, 1949, vyp. 9, s. 1075-82. -- Bibliogr: 9 nazv.

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

PA 153T89

BARTENEV, G. M.

USSR/Physics - Instruments, Measuring Elasticity — Nov 49

"Method of Measuring the Dynamic Modulus of Elasticity of Highly Elastic Materials in Relation to the Degree of Compression," G. M. Bartenev, Sci Res Inst of Rubber Ind, 5 1/2 pp

"Zavod Lab" No 11

Describes instrument for measuring dynamic characteristics of soft materials during periodic deformation, giving formula for determining relationship between dynamic modulus of elasticity for small amplitudes (less than 0.1 mm) and degree of one-dimensional compression of soft

153T89

USSR/Physics - Instruments, Measuring (Contd) — Nov 49

material. Gives results of measuring dynamic (15 cps) and static moduli of elasticity of soft rubber. Includes sketch and two graphs.

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2

CA

The importance of intermolecular forces in the mechanism of high-elastic deformation. I. Molecular mechanism and an equation for the kinetics of high-elastic deformation. B. A. Dogadkin, G. M. Bartenev, and M. M. Rezaikovskii. *Kolloid. Zhur.* 11, 314-21(1949).—Relaxation in a deformed high-elastic material consists of 2 processes: The 1st involves reorientation of small structure elements, has periods of relaxation (τ) much shorter than a sec., and is characterized by modulus of elasticity K_0, whereas the 2nd exists only in rubberlike materials, involves reorientation of mol. chains, has large τ which varies with stress σ, and is characterized by modulus K_1. Hence, Maxwell's equation is changed to $(d\sigma_1/dt) = (K_0 - K)(d\epsilon/dt) - (\sigma_1/\tau)$ if t is time, ϵ is deformation, and σ_1 stress remaining after the completion of the 1st process. For τ, the equation $\ln \tau = \ln \tau_0 + (U/kT) - [V\sigma_1^2/2kT(K_0 - K)]$ is derived; U is energy of activation of the 2nd process and V is the vol. of "kinetic unit of relaxation." A film of smoked sheet prepd. by evapn. of a soln. in benzene was extended 100%, and $d\sigma_1/dt$ was detd. at various t and const. ϵ. The τ calcd. from these expts. was a linear function of σ_1^2, as required by theory, at 22°, 40°, and 60°. J. J. Bikerman

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PA 45/49T20

BARTENEV, G. M.

USSR/Chemistry - Colloids Mar/Apr 49
Chemistry - Butadiene, Styrene

"Highly Elastic Properties of Vulcanized Butadiene Styrene Rubber," G. M. Bartenev, Phys Lab, Sci Res Inst for Rubber, Moscow, 6 pp

"Kolloid Zhur" Vol XI, No 2

Describes experiments. Tabulates and plots results. All specimens behaved in accordance with Hook's law. Submitted 2 Sep 48

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BARTENEV, G. M.

PA 152T89

USSR/Physics - Glass, Hardening Dec 49

"Investigation of the Hardening of Glass," G. M. Bartenev, 10 pp

"Zhur Tekh Fiz" Vol XIX, No 12

Calculates the internal stresses in a tempered plate. The theory of tempering and hardening is compared with experimental results. Submitted 25 Jun 48.

[redacted]

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ma

1

Thermal Expansion Near the Melting Point. G. M. Bartenev (*Zhur. Fiz. Khim.*, 1949, 23, (9), 1075-1083).—[In Russian]. Having previously (*Ibid.*, 1948, 22, 587) calculated the quantity of liq. phase formed by thermal fluctuations in a pure substance at temp. below the m.p., B. now uses his formula to calculate the additional thermal expansion of a substance near the m.p., arising from the increase of this quantity with temp. The anomalous increase α_{an} in vol. expansion coeff. at temp. T is approx. given by:

$$\alpha_{an} = (\rho_1 - \rho_0)/\rho_0 \cdot k/\mu\gamma \cdot (T_0/(T_0 - T))^2,$$

where ρ_1 and ρ_0 are the d of the solid and liq. phases, resp., k is Boltzmann's const., γ is the latent heat of fusion for the substance, T_0 is its m.p., and μ is the "quantum of fusion", an adjustable parameter related to the size of the individual regions of liq. phase. Experimental results for Bi (Roberts, *Proc. Roy. Soc.*, 1924, [A], 106, 305; *J. Inst. Metals* (Abstracts), 1925, 33, 298; Gochkovsky and Strelkov, *Zhur. Eksper. Teoret. Fiziki*, 1937, 7, 532; *M.A.*, 5, 234) are consistent with this formula, with $\mu = 1340$ atoms; those for Zn (G. and S., *loc. cit.*) are equally consistent, with $\mu = 9000$ atoms. Rough estimates from experimental data for Cd (G. and S., *loc. cit.*) and Hg (Carpenter and Oakley, *Phil. Mag.*, 1931, [vii], 12, 511); *Met. Abs.* (*J. Inst. Metals*), 1931, 47, 468) give $\mu = 3750$ and 210,000 atoms, resp. For the Zn specimen the anomalous thermal expansion begins below any temp. to which the solidus could be lowered by impurities found on chem. analysis, but for the other metals this question is not settled.—G. B. H.

Evaluation B-78945

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B

26

Contribution to the Problem of Phase Transitions of the Second Order. (In Russian.) G. M. Bartenev. *Zhurnal Fizicheskoi Khimii* (Journal of Physical Chemistry), v. 23, Nov. 1949, p. 1357-1360.

Presents a critical mathematical analysis of Epstein's theory of the above.

METALLURGICAL LITERATURE CLASSIFICATION

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CA

2

Vitrification of high polymers in periodic deformation. G. M. Bartenev (Nauch.-Issledovatel. Inst. Rezinovoi Prom., Ministerstva Khim. Prom.). *Doklady Akad. Nauk S.S.S.R.* 69, 373-6(1949).—The vitrification temp. T_g is defined as the point of inflection on the curve representing the variation, as a function of the temp., of any property that undergoes a characteristic change in the transition from the elastoviscous liquid to the brittle-vitreous state. A suitable magnitude is the amplitude D of periodic deformation of the frequency ω. The curves of D against the temp. show inflections which shift to higher temps. with increasing ω. On the basis of the work of Aleksandrov and Lazurkin (*Kaichuk i Resina* 1939, No. 10, 34), $D = (\sigma_0/E_\infty)[(1 + (E_\infty/E_0)\omega^2\tau^2)/(1 + \omega^2\tau^2)]^{1/2}$, where σ_0 = amplitude of the stress, E_0 and E_∞ = elastic and hyperelastic modulus, resp., and the mean relaxation time $\tau = \tau_0 e^{U/kT}$. The inflection point on the curve $D = f(\ln \tau)$ corresponds to the condition $\omega\tau = \sqrt{2}$, and hence $\ln \omega + (U/kT_g) = \ln \sqrt{2} - \ln \tau_0$. The very nearly linear relation between $\ln \tau$ and $1/T$ observed for many polymers indicates that the activation energy U varies but little with the temp. Consequently, T_g can be detd., without significant error, from the inflection of the curve $D(1/T)$ instead of $D(\ln \tau)$. The exptl. linear relation between $1/T_g$ and $\log \omega$, for natural *rubber*, *chloroprene*, and *polystyrene*, confirms the above formulation.

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PROCESSES AND PROPERTIES INDEX

C

5

Calculations in glass tempering. G. M. BARTENEV. *Steklo i Keram.*, 7 [2] 7-13; [3] 7-12 (1950). For a plate, the relationship between extent of tempering and intensity of cooling is expressed by $\Delta = B \times 10^{6} \frac{\beta E}{1-\sigma} T_g \left\{ -\frac{1}{a} \int_0^a \ln \cos \frac{\delta_1 x}{a} dx \right.$ (I), where Δ is extent of tempering (birefraction in mμ/cm.); B is stress-optical coefficient (cm.²/kg.); β is coefficient of linear expansion; E is Young's modulus (kg./cm.²); σ is Poisson's ratio; T_g is vitrification temperature, calculated in degrees from the temperature of the cooling medium; a is one-half the plate thickness (cm.); and δ_1 is a parameter which characterizes the intensity of cooling. By substituting $y = \delta_1 x/a$ and $I_1 = 1/\delta_1 \int_0^a \ln \cos y dy$, $I_1 = \frac{\Delta(1-\sigma)}{B \times 10^6 \beta E T_g}$ (II). For low values of δ_1, $I_1 = \delta_1^2/6\ (1 + \delta_1^2/10)$ (III) and $\delta_1^2 = 5(\sqrt{1 + 2.4 I_1} - 1)$ (IV) can be used. The value of I_1 in IV is determined from II. Values of I_1, determined both by graphical integration and from III, are tabulated for δ_1 of 0.05 to 1.54. These indicate that IV can be used without significant errors up to $\delta_1 = 0.6$, which corresponds to $I_1 = 0.062$. For higher values of I_1, δ_1 is obtained from the table. The values of ha, where h is relative coefficient of heat loss, are obtained from a table of ha vs. δ_1. With h determined, the coefficient of heat loss, α, can be calculated from $\alpha = \lambda h$, where λ is heat conductivity determined from the chemical composition. In practice, the tempering temperature, T_e, can be calculated from $\log T_e = \log T_g + \log \frac{\delta_1(\delta_1 + \sin \delta_1 \cos \delta_1)}{2 \sin^2 \delta_1} + 0.87 \frac{\delta_1^2}{\delta_1^2 - \delta_1^2}$ (V). The values of the second and third members in the right half of V are tabulated for δ_1 of 0.05 to 1.54. T_e (in °K.) can be calculated from $1/T_e = C_1 - C_2 \log W$ (VI), where W is dT/dt (rate of cooling) and C_1 and C_2 are, respectively, $\log \tau_0$ and $2.3h/U$ as obtained from the relaxation equation $\tau = \tau_0 e^{U/kT}$. T_e is calculated by (1) plotting a linear expansion curve and selecting the break-point in the curve as T_e; or (2) with known constants of a given glass, calculating T_e from VI and adding the difference between the annealing temperatures (upper limit of annealing region) of the two glasses. If the length and width of the object are large compared to its thickness, W is determined for VI from $W = \alpha T_e / c\rho a$ (VII), where c is heat capacity and ρ is density as calculated from the chemical composition. For determining values of B, literature data, mostly by Balmforth and Holland (*Ceram. Abstracts*, 1946, July, p. 123), are given. The convectional coefficient of heat loss, α_1, which plays the chief role in glass tempering, can be determined from $\alpha = \alpha_1 + \alpha_2$ where α_2 is radiational coefficient of heat loss; with α established, α_2 can be calculated from $\alpha_2 = \epsilon C (T_e^2 - \theta^2)(T_e + \theta)$, where ϵ is relative radiation capacity of the glass (0.93), C is radiation constant of an absolutely black body (1.38×10^{-12} cal./cm.² sec. degree⁴),

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and θ is temperature of the medium (°K.). When the cooling air stream is at 90° to the glass, $N_{Nu} = 0.0128 N_{Re}^{0.8}$. When using a grate, the air pressure, p, in mm. Hg can be calculated from $\log p = 2.22 \log a_1 + 0.22 \log L + K(z) - 2.35$ (VIII), where L is width of the plane object in cm., and $K(z)$ is a dimensionless magnitude characteristic of the grating (z is the distance from the jets of the grate to the glass surface). $K(z)$ can be determined from $^1/_2 K(z) = 3.58 - \log \psi(z)$, where $\psi(z)$ is a decreasing function which depends upon the diameter of the jets and their distribution, if the function $\psi(z)$ is known. In a less rigid method, several specimens are tempered at calculated temperatures, using different values of p and z, and the values of $K(z)$, as determined from VIII, are plotted. The relationship between the extent of tempering and the air pressure through the grate is expressed by $\Delta - \Delta_0 + \text{const.} \sqrt[3]{p}$. Sample calculations involved in tempering auto glass 6 mm. thick with an OSZ air grate are given. 13 curves.

B.Z.K.

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3RD AND 4TH ORDERS

e

5

Change in extent of tempering during grinding of tempered glass. G. M. Bartenev. *Stekloi Keram.*, 7 [4]: 9 (1950). — A change in the extent of tempering (Δ) during grinding of plane tempered glass can be calculated from $\Delta = \Delta_0(d/d_0)^2$, where Δ_0 is extent of tempering prior to grinding, d_0 is thickness prior to grinding, and d is thickness after grinding one or both sides. Experimental and theoretical calculations agree. B.Z.K.

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1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

C

17 5

Semitempered shapes and their use. S. G. LIOZNYANSKAYA AND G. M. BARTENEV. *Steklo i Keram.*, 7 [8] 5-9 (1950).—Semitempering (creation of small residual stresses) increases thermal stability considerably and improves the strength of shapes. The nature of the destruction (analogous to annealed glass) and less rigid requirements with regard to homogeneity are of practical advantage in certain applications. Calculations of thermoelastic stresses and of thermal stability indicate that, in all cases of service, the stability is directly related to strength; all technological measures to increase strength should result in simultaneous improvement in thermal stability. Small residual stresses can be created simply by air cooling the heated or molded shape under conditions of free convection. The extent of tempering in air depends on the thickness and composition of the glass; for glass of SiO_2 71.3, Al_2O_3 0.7, Fe_2O_3 0.1, CaO 7.6, MgO 3.3, Na_2O 15.9, and SO_3 0.7%, the temper increased from 95 mμ/cm. (0.17 n/cm.) for 2 mm. to 850 mμ/cm. (1.57 n/cm.) for 25 mm. Compared with annealing, the thermal stability and strength of 6-mm. sheets was almost doubled by semitempering. Experiments with 6- and 16.5-mm. sheets indicate that the upper limit is 650° to 670°C. and the lower limit below 580°. For various practical purposes (shapes of large dimensions) it is possible to replace the test for thermal stability of the shape with a test for strength using glass of given composition and thickness, and then make an approximate calculation of the thermal stability. Equations for calculating thermoelastic stresses are given. Curves show the extent of tempering as a function of holding time in the furnace prior to tempering.

B.Z.K.

COMMON ELEMENTS

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CA

20

Equation of state of rubber from the viewpoint of thermodynamics. G. M. Bartenev (Inst. Fine Chem. Technol., Moscow). *Kolloid. Zhur.* 12, 81-7(1950). Thermodynamic relations between internal energy U, entropy, volume V, temp. T, pressure p, applied stress f, and relative elongation λ are derived for the ideal rubber, whose U value depends only on V and T, and whose V depends only on p and T, semi-ideal rubber whose V depends on λ, and real rubber, whose U and V depend on λ. The analogous equations of Wiegand and Snyder (*C.A.* 29, 4208[6]), James and Guth (*C.A.* 37, 6930[1]), and Elliot and Lippmann (*C.A.* 39, 1562[2]) are inexact. In particular, contrary to James and Guth, no correction for thermal expansion is required. The equations explain, e.g., why f decreases when T increases if λ is small and kept const.

J. J. Bikerman

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"APPROVED FOR RELEASE: 06/06/2000 CIA-RDP86-00513R000203720016-0

CA

Thermoelastic properties of noncrystallizing rubbers. G. M. Bartenev (Inst. Chem. Technol., Moscow). *Kolloid. Zhur.* 12, 241-7(1950); cf. *C.A.* 44, 6181g.—Buna-S, vulcanized with 3% S and not loaded, was extended at 70° to length λl_0, then cooled to 25° (λ is kept const.), again warmed to 70°, until the equil. values of f were reached. l_0 is the length of the unstressed sample, which depends on temp. (cf. Roth and Wood, *C.A.* 39, 4177); the linear coeff. β of thermal expansion was 0.00021 degree^{-1}. f is the initial stress, i.e., load divided by the initial cross-section. At 80°, f decreased in time without reaching an equil. value. The final f (at 70°) increased with the relative extension λ to, e.g., 6 kg./sq. cm. at λ = 2.7 and 70°. At 25°, f was about 10% less than at 70°. At a given λ, $V_0 f$ was proportional to the abs. temp. T (V_0 is the specific vol. of unstressed rubber). From the dependence of $V_0 f$ on λ, the term $(\partial U/\partial \lambda)_T$ was approx. −3% of $V_0 f$ and thus was within the limits of error (U is the specific internal energy). Thus, the rubber was an almost ideal system. The real stress σ ($= \lambda f$) was proportional to λ, and the modulus E of high elasticity was 8.01 and 9.05 kg./sq. cm. The exptl. ratio of these moduli agreed with the theoretical expression $E_1/E_2 = (T_1/T_2)[1 + 3\beta(T_1 - T_2)]$ (cf. *Zhur. Tekh. Fiz.* 20, 401(1950)). J. J. Bikerman

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BARTENEV G. M.

USSR/Chemistry - Polymers Nov/Dec 50

"Description of the Mechanical Properties of High Polymer Substances With the Aid of the Model Method," G. M. Bartenev, Sci Res Inst of Rubber Ind

"Kolloid Zhur" Vol XII, No 6, pp 408-413

Physically substantiated simple models are proposed which describe mechanical properties of high polymer substances with and without spatial lattices. Examines physical meaning of constants which determine these properties and their relation to structural characteristics of high polymers. Indicates deformation equations for individual models corresponding to 3 physical states of high polymers.

170T9

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BARTENEV, G. M.

166T15

USSR/Electricity - Semiconductors Jul 50

"Methods for Measuring the Resistivity of Semiconductors Made of Soft Materials," G. M. Bartenev, G. K. Demishev, Sci Res Inst of Rubber Ind

"Zavod Lab" Vol XVI, No 7, pp 807-813

Develops simple methods for measuring specific electric resistance of semiconductors made of soft materials, such as rubber and plastics: method of superposed contacts, substitution method, and average point method. Compares methods with Miller method, discusses advantages and shortcomings, and indicates limits of application, between 10^{-2} and 10^{7} ohm cm.

166T15

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PA 169T31

USSR/Engineering - Gaskets, Testing — Sep 50

"Measuring the Rate of Gas Penetration Through a Gasket Made of Soft Material," G. M. Bartenev, Inst of Rubber Ind

"Zavod Lab" Vol XVI, No 9, pp 1088-1091

Bartenev developed simple method and apparatus for measuring quantity of gas penetrated through gasket per unit of time. Gaskets of various materials are used for hermetic sealing in laboratory and technological equipment. Method facilitates

169T31

USSR/Engineering - Gaskets, (Contd) — Sep 50

selection of proper material, and permits calculation of gas losses or contamination.

169T31

BARTENEV, G. M.

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PROCESSES AND PROPERTIES INDEX

The State of Matter Near the Melting Point. G. M. Bartenev (*Zhur. Eksper. Teoret. Fiziki*, 1950, 20, (3), 218-223; *Physics Abs.*, 1950, 53, 639).—[In Russian]. A derivation is given from general principles of the relation describing the liq.-cryst. state of pure substances near the m.p. Calculation shows that in a Zn single crystal the liq. phase within 3° C. of the m.p. represents ~1%. The calculation was carried through for the anomalous part of the sp. heat and of the vol. coeff. of expansion near the m.p. Agreement with measured results for Zn and Sn was satisfactory. The const. μ entering the formula and determined by experiment, represents phys. the critical molecular complex indicating the transition with a reduction of the number of particles in the system from the macro-characteristics of the phase to the micro-characteristics of the molecules. The dimensions of the critical molecular complex are 9000 atoms for Zn and 1500 for Sn. The max. number of independent centres of fusion or crystn. which may exist simultaneously in a system, is equal to the number of the critical molecular complexes forming the system. The ideal polycrystal corresponds to the simultaneous emergence of this max. number of centres in the liq. phase, and μ indicates the lower limit of the polydispersity of the polycryst. material.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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PA 164T69

BARTENEV, G. M.

Jul 50

USSR/Physics - Elasticity
Rubber

"High-Elastic Properties of Noncrystallizing Rubber," G. M. Bartenev, L. A. Vishnitskaya, Chair of Chem and Phys of Rubber, Moscow Inst of Fine Chem Technol imeni Lomonosov

"Zhur Tekh Fiz" Vol XX, No 7, pp 858-865

Describes method for obtaining equilibrium curves of tension, results of measurements on vulcanizers of butadiene styrol rubber, and comparison of theories of high-elastic deformation with experiments. Submitted 18 Mar 49.

164T69

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CA

Rubber vulcanization. VI. Change in two-dimensional extension modulus during vulcanization of natural and butadiene-styrene rubbers. B. A. Dogadkin, G. Bartenev, and N. Novikova (Lomonosov Inst. Fine Chem. Technol., Moscow)! *Rubber Chem. & Technol.* 23, 553-62(1950). See *C.A.* 43, 8192g. VII. Influence of organic accelerators on the kinetics of vulcanization and the properties of natural-rubber vulcanizates. B. A. Dogadkin, B. Karmin, A. Dobromyslova, and L. Sapozhkova (Lomonosov Inst. Fine Chem. Technol., Moscow)! *Ibid.* 563-75.—See *C.A.* 43, 8193a.

C. C. Davis

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CA

Heat capacity near the melting point. G. M. Bartenev (Inst. Rubber Ind., Moscow). *Zhur. Fiz. Khim.* 24, 1016-22(1950).—An equation is suggested that describes the anomaly of the heat capacity near the m.p. of pure substances. Theoretical and exptl. data for Sn and paraffins are compared; the equation proves valid. In the case of the paraffins, the anomalous effects are explained only by phase changes near the m.p. Paul W. Howerton

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CA

Plastic flow of polybutadiene. (I). M. Bartenev (Lomonosov Chem.-Tech. Inst., Moscow). *Zhur. Fiz. Khim.* 24, 1210-18(1950).—Cylindrical (10 × 10 mm.) samples of Na butadiene rubber (viscometric mol. wt. = 88,000) were compressed under const. stress (σ = −0.5 kg./sq. cm.) at 3 different temps. (45, 60, and 75°) during a time t (5 min. to 5 hrs.). Vol. changes and ordinary elastic deformations were neglected. The length of the sample was measured before deformation (L_0), under compression (L), and after removal of the load and 24-hr. sojourn in boiling water (L_P). Subscripts P and HE refer, resp., to the plastic and highly elastic deformation. A linear relation between $\varepsilon_P = \ln \lambda_P = \ln (L_P/L_0)$ and t shows that Newton's law $\sigma = \eta\, d\varepsilon_P/dt$ is obeyed. From the slope of the straight lines, the variation of η with temp. is found; the viscosity activation energy is 17,500 cal./mole. When $\lambda_{HE} = L/L_P$ is plotted against t, it is seen that λ_{HE} reaches a stationary value after a length of time that decreases when the temp. increases. The kinetics of the HE deformation is interpreted on the basis of a model consisting in a Maxwell model (E_1 and $\eta_1 = E_1\tau_1$) and a spring (E_∞) in parallel. E_1 and E_∞ are, resp., the HE and the stationary HE moduli. The deformation equation is then: $d\sigma/dt = E_0' \, d\varepsilon/dt - (\sigma - E_\infty\varepsilon)/\tau_1$ where $E_0' = E_\infty + E_1$ and $\varepsilon = \lambda_{HE} - 1$. Since σ = const., and on the assumption that τ_1 = const., integration gives: $\log (\varepsilon - \varepsilon_\infty) = \log (\varepsilon_0 - \varepsilon_\infty) - 0.434\, E_\infty t/\tau_1 E_0'$ (1), where $\varepsilon_0 = \sigma/E_0'$ and $\varepsilon_\infty = \sigma/E_\infty$. Equation (1) is verified by plotting $\log (\varepsilon - \varepsilon_\infty)$ against t; a straight line is obtained for the data for each temp. The intercept gives $\log (\varepsilon_0 - \varepsilon_\infty)$ and the slope $E_\infty/\tau_1 E_0'$. From these values, τ_1 and thus η may be calcd. The relation $\eta = Z\tau_1$ gives the no. Z of segments in a macromol. A segment is the largest part of the mol. that may be considered as rigid and that slips as a whole under stress (cf. Kargin and Bogolova, *C.A.*

Gerald F. Rynders (Natl. Bur. Standards, Washington D.C.). *J. Research Natl. Bur. Standards* 46, 188-71 (1951)(Research Paper No. 2189); cf. *C.A.* 44, 6243*b*, 42, 6212*b*.—The pH responses of electrodes prepd. from Na_2O-K_2O-SiO_2 glasses are in accord with the data reported for the Na_2O-CaO-SiO_2 and Na_2O-PbO-SiO_2 glasses. Glasses of very low hygroscopicity yield electrodes whose pH responses fall appreciably below the theoretical 59 mv./pH at 25°. Electrodes prepd. from glasses of poor chem.

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CA

Elasticity of crystals near their melting point. G. M. Bartenev (Inst. Resin Ind., Moscow). *Zhur. Fiz. Khim.* 24, 1437-41(1950).—The theory of B. (*C.A.* 44, 891*i*) relative to phase fluctuations near the m.p. is extended to the elastic properties, so that a comparison can be made with the exptl. data of Kronfel'd and Shestikhin (*C.A.* 37, 1314[9]), who measured the shear modulus G of tin and ice near their m.p. and found that G was anomalous in this region. Taking into account the randomly distributed metastable liquid domains, $G = G_N[1 - (M_L/M)]^2$ where G_N is the "normal" shear modulus, M the mass of the sample, M_L the mass of the liquid domains in the sample. But (*C.A.* 45, 1415*a*) $M_L/M = kT_m T/\mu\gamma\theta$, where k is Boltzmann's const., T the temp., T_m the m.p., γ the heat of fusion, $\theta = T_m - T$ and μ is the "quantum of fusion" postulated but undetd. by the theory. The two relations give $1 - (G/G_N)^{1/2} = kT_m T/\mu\gamma\theta$, so that by plotting $1 - (G/G_N)^{1/2}$ vs. T/θ, the exptl. data give a straight line the slope of which gives μ. In this fashion, μ is detd. equal to 2.0×10^{-19} g. (= 1020 atoms) for tin and to 4.5×10^{-20} g. (= 4500 atoms) for ice. The value of μ for tin detd. from anomalies in the heat capacity is 1400 (*C.A.* 45, 1415*a*), so that the agreement is favorable. The theory is valid only for equil. conditions, but this situation is approached in the expts. of Kornfeld, *et al.*, owing to the high frequency used (3000 cycles) in the detn. of G. Furthermore impurities in the case of ice and polycrystallinity in the case of tin (compared to the properties of a single crystal) do not alter substantially the anomalous exptl. values of G near the m.p., so that the interpretation of these anomalies in terms of phase fluctuations seems justified. Michel Boudart

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1st and 2nd order

Processes and properties index

B

1583 **Recent Translations of Russian Papers of Interest to the Glass Industry.** *Glass Industry*, v. 31, Dec. 1950, p. 629-631, 660.

Presents lengthy abstracts of the following papers from *Stekło i Keramika* (Glass and Ceramics): "Hardening of Glass," G. M. Bartenev; "Reduction of the Degree of Hardening of Glass by Grinding," G. M. Bartenev; "Corrosion of Refractories in the Flame Zone of Glass Furnaces," A. I. Polinkovskaya, V. T. Savinov, and N. V. Solomin; "The Rate of Melting of Briquets," D. L. Gik and V. V. Pollyak; and "Foam Glass in U.S.S.R.," I. I. Kitaigoradskii.

Common variables index

Materials index

ASM-SLA metallurgical literature classification

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

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Q

238-Q. **Dependence of Tensile Strength on Duration of Applied Stress for Brittle Fracture.** (In Russian.) G. M. Bartenev. *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR), new ser., v. 71, Mar. 1, 1950, p. 23-26.

On the basis of theoretical considerations and interpretation of formulas proposed by Griffith, the author concludes that "static" fatigue may be explained purely mechanically. Brittle fracture is characterized by two constants: maximum technical tensile strength and "static" fatigue. (Q23, Q7)

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