FOGEL', G. [Fohel', H.]

We increase and lower the cost of the production of precast reinforced concrete. Sil'. bud. 12 no.11:17-18 N '62.
(MIRA 15:12)

1. Glavnyy inzh. Khersonskoy oblastnoy mezhkolkhoznoy organizatsii.
(Kherson Province—Precast concrete)

FOGEL, Maria, dr.

Radiological diagnosis of retroperitoneal inflammations. I. Pancreatitis. Magy. radiol. 6 no.4:155-162 Oct 54.

1. A III. sz. Sebeszeti Klinika (igazgato: Rybanyi Pal dr. egyetemi tanar) es a III. sz. Belklinika (igazgato: Gomori Pal dr. egyetemi tanar) rontgenintezetenek kozlemenye. (vezeto:Fogel Maria dr.)
(PANCREATITIS, diag.
x-ray)

SXG BIBLIA MEDICA Sec 14 Vol.10/4 Radiology Apr 56

FOGEL M. and FEJÉR R. Röntgenabt. III chir. Univ.-Klin., III Med. Univ. Klin., Budapest. *Röntgenologische Veränderungen varikösen Ursprunges am Magenfornix. Roentgenological changes of varicose origin in the gastric fold FORTSCHR. RÖNTGENSTR. 1955, 83/2 (204-207) Illus. 4

ort of 2 cases. The first case showed splenomegaly with cirrhosis and repeat- gastric haemorrhages. The oesophagus contained characteristic varicose phe- nena, and at the cardia an arcuate formation the size of a walnut was observed. se findings were confirmed during splenectomy. The second case concerned a ng man who, after a fall with subsequent splenic enlargement and extirpation his organ, had shown frequent haemoptyses and melaena since his childhood. e oesophagus was roentgenologically normal. A nodular tumour, the size of a nut, was found in the gastric fundus. The smaller curvature presented a niche- e formation which disappeared on compression. According to Melik-Arutjunoff, h pseudo-niches develop by elevation of the mucosa between 2 markedly pro- ting dilated veins, which are evacuated by compression. This was confirmed operation. In spite of gastrectomy, the haemorrhages re-appeared. Oesophago- py then revealed venous dilatation in the oesophagus. Pape - Vienna

FOGEL, Maria, dr.

Cortical form of osteoid osteoma. Magy. sebeszet 9 no.3:151-155 June 56.

1. A Budapesti Orvostudomanyi Egyetem III. sz. Sebeszeti Klinika (igazgato: Kudasz Jozsef dr. egyetemi tanar) rontgenintezetenek kozlemenye (Vezeto: Fogel Maria dr.)

(OSTEOMA, OSTEOID
cortical, x-ray diag. & differ. diag. (Hun))

EXCERPTA MEDICA Sec 14 Vol.10/12 Radiology Dec 56

2088. FOGEL M. and FEJÉR R. Röntgenabt., III. Chir. Univ.-Klin., Budapest.
*Hyperostosis generalisata. Generalized hyperostosis RADIOL. CLIN. (Basel) 1956, 25/2 (115-120) Illus. 6

Generalized hyperostosis is a rare disease of the skeletal system with changes in bone structure and shape, obliteration of joint spaces and calcification of ligaments. Investigations on 2 generations of patients enabled the authors to observe the various developmental phases of the disease and the course of heredity. As far as the authors know, experiences on 2 generations have so far not been published.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000413410005-3"

FOGEL, MARIA, ed.

Rontgenasszisztensek tankonyve. Irtak: Furth Bela (et al.) 2., atdolg. kiad. Budapest, Hungary. Medicina, 1957. 281 p.

Monthly List of East European Accessions (EEAI), LC, Vol. 8, no. 11, November 1959, Uncl.

EXCERPTA MEDICA Sec.14 Vol.12/5 Radiology May 1958

FOGEL M.

892. POSTBULBAR DUODENAL ULCERS - A postbulbaris duodenalis fekélyek - Fogel M. and Rossmann B. Orvostud. Egyet. III. sz. Sebészeti Klinika, Budapest - MAG. RADIOL. 1957, 9/1 (11-16) Illus. 6

85% of the duodenal ulcers develop in the bulb, i.e. in the first portion of the duodenum 2 cm. long. 10% in the second part 3 cm. long and 5% at a distance more than 5 cm. from the duodenal base. Postbulbar ulcers are characterized by pains independent of the ingestion of food. The generally small postbulbar niches are accompanied by a long eccentric stricture uninfluenceable by spasmolytics, whereas the pylorus and the duodenal bulb are atonic and dilated.

Györgyi - Budapest (XIV, 6*)

FOGEL, Maria, Dr.; SOMOGYI, Zsuzsa, Dr.

X-ray diagnosis of the ileocecal region; changes observed in the Bauhin valve. Magy. radiol. 9 no.4:206-211 Dec 57.

1. A Budapesti Orvostudomanyi Egyetem III. Sebeszeti klinika (igazgato: Rubanyi Pal, Dr. egyet tanar) rontgen laboratoriumanak (vezeto: Fogel, Maria) kozlemenye.

(ILEUM, radiography
ileocecal valve in normal & pathol. cond. (Hun))

HUNGARY/General Problems of Pathology - Tumors U-4

Abs Jour : Ref Zhur - Biol., No 7, 1958, No 32723

Author : Fogel Maria, Radnai Vera
Inst : Not Given
Title : Carcinoma of the Duodenum.

Orig Pub : Orv. hetilap, 1957, 98, No 10-11, 279-281

Abstract : According to postmortem data, malignant new formations of the duodenum comprise 0.03% of all tumor illnesses. A case is described of adenocarcinoma at the outlet branch of the duodenum. Partial pancreo-duodenectomy took place, as well as resection of the stomach, the bile duct and pancreaticoenterostomose, enthropo-enteroanastomose, and cholecystectomy. The patient quickly died. The authors consider that in spite of the high postoperative fatality (~22%) in the absence of metastases, it is necessary to conduct the radical operation.

Card : 1/1 A III. sz. Sebészeti Klinika és a
III. sz. Sebészeti Klinika Röntgenintézetének

FOGEL, Maria; SOMOGYI, Zsuzsa; GACS, Janos

Transposition of the pulmonary vein. Magy. radiol. 10 no.3:147-154 Sept 58.

1. A Budapesti Orvostudomanyi Egyetem III. Belklinika (Igazgato: Gomori Pal dr. egyet. tanar) es III. Sebeszeti Klinika (Igazgato: Rubanyi Pal dr. egyet tanar) rontgenosztalyanak (Vezeto: Fogel Maria dr.) kozlemenye.
(VEINS, PULMONARY, abnorm.
transposition, x-ray diag., case report (Hun))

1535. TRANSPOSITION OF THE PULMONARY VEINS - Transposition der Pulmonalvenen - Fogel M., Somogyi Z. and Gács J. Röntg.-Inst., III. Med. Univ.-Klin. und III. Chir Univ.-Klin., Budapest - FORTSCHR. RÖNTGENSTR. 1959, 90/1 (32-37) Illus. 7

Transposition of the pulmonary veins is a rare developmental-anomaly; it can be either total or partial. Total transposition is compatible with life only when combined with a septal defect which enables the blood to flow into the left heart. The case under discussion involved partial transposition; all veins of the right lung opened into the inferior vena cava. Haemodynamically there was a left-right shunt. The anomaly is seldom isolated; it is usually associated with hypoplasia of the lungs, bronchi and pulmonary artery, and frequently with atrial septal defect.

FOGEL, Maria, dr.

On roentgenological aspects of portal hypertension. Magy. sebesz. 15 no.2:93-96 My '62.

(HYPERTENSION PORTAL radiog) (ANGIOGRAPHY)

HUNGARY

FOGEL, Maria, Dr; Medical University of Budapest, Department of Rontgenology of the III. Surgical and III. Medical Clinics (Budapesti Orvostudomanyi Egyetem III. Sebeszeti es III. Belklinikajanak Rontgenintezete).

"Stricture Producing Esophagitis of Other than Alkaline Origin and its Differentiation from Infiltrative Tumors."

Budapest, Magyar Radiologia, Vol XV, No 2, Apr 63, pages 65-72.

Abstract: [Author's English summary] The different forms of esophagus stenoses are classified on the basis of nearly 500 examinations. Inflammations due to non-alkaline causes are described with special reference to their X-ray pictures thus facilitating their differentiation from tumors. The differentiation between infiltrative tumors of the abdominal tract of the esophagus and the cardiospasms as well as the recognition of cancer developed from alkaline stenosis is fully treated. The majority of the cases discussed by the author have been verified by surgery and histological examinations. All Western references.

1/1

FOGEL, Maria, Dr.

Dr. Geza Molnar. Magy. radiol. 15 no.1:64 Ja '63.
(OBITUARIES)

FOGEL', Mariya[Fogel, Maria], dots.; NAD', Zoltan[Nagy, Zoltan], SIZA, Mario [Szisa, Mario], doktor [translator]; RAVAS, Yanosh [Ravasz, Janos], dots., nauchn. red.; ERDEI, Mikhay [Erdei, Mihàly], dots., nauchn. red.; BERNAT, D'yerd' [Bernàt, György], otv. izdatel'; ALEKSA,M. [Aleksza, M], red.; CHERGE, I.[Csörgò, I.], tekhn. red.

[X-ray atlas of traumatology] Rentgenovskii atlas po travmatologii. Budapest, 1964. 439 p. Translated from the Hungarian. (MIRA 17:3)

1. Zaveduyushchaya otdelom rentgenologii III terapevticheskoy kliniki Budapeshtskogo meditsinskogo universiteta i Gosudarstvennogo Instituta Travmatologii (for Fogel').
2. Glavnyy rentgenolog Budapeshtskoy TSentral'noy Travmatologicheskoy Ambulatorii (for Nad').

FOGEL, Maria, dr.

Roentgenologic changes in the cardia following esophagofundostomy.
Magy sebesz. 17 no.4:210-215 Ag '64.

1. A Budapesti Orvostudomanyi Egyetem III Belklinika rontgenosztalya.

FOGEL, Marian

Investigations on the properties of immune sera against M and N characteristics of human blood. Arch. immun. ter. dosw. 4:35-43 1956.

1. Instytut Immunologii i Terapii Doswiadczalnej PAN we Wroclawiu (Dyrektor: prof. dr St. Slopek) Dział Immunologii) Kierownik: prof. dr. H. Kowarzyk).

(BLOOD GROUPS
M & N anti-M & anti-N sera of rabbit, possibility of isolation of heterologous antibodia)

(ANTIBODIES
heterologous antibodies, possibility of isolation from immune rabbit anti-M & anti-N sera)

DUX, Kazimierz; SLOPEK, Stefan; BREGULA, Urszula; FOGEL, Marian

Modifications of antigenic structure of Guerin's rat epithelioma as a result of heterotransplantation on mice. Arch. immun. ter. dosw. 5:329-345 1957.

(NEOPLASMS, immunol.
antigenic structure of Guerin's rat epithelioma, changes after transpl. on mice (Pol))

FOGEL', N.; RADCHENKO, I.

Simple home-made apparatus for cauterization. Vrach.delo no.5:529 My '59. (MIRA 12:12)

1. Khersonskaya oblastnaya bol'nitsa. (GAUTERY)

FOGEL', N.D.; DOBRYKINA, M.A.

Simple device for pneumoencephalography. Vrach.delo no.5:521 My '60.
(MIRA 13:11)

1. Khersonskaya oblastnaya bol'nitsa.
(ENCEPHALOGRAPHY).

FOGEL', N.D.; DOBRYKINA, M.A.

Table for lumbar puncture. Vrach. delo no.8:118-119 Ag '60.
(MIRA 13:9)

1. Khersonskaya oblastnaya bol'nitsa.
(SPINE--PUNCTURE) (MEDICAL INSTRUMENTS AND APPARATUS)

FOGEL', N.D.; DOBRYKINA, M.A.

Result of kymographic registration of cerebrospinal dynamics tests. Zhur. nerv. i psikh. 60 no. 2:172-174 '60. (MIRA 14:4)

1. Khersonskaya oblastnaya bol'nitsa (glavnyy vrach A.F. Maksin).
(CEREBROSPINAL FLUID)

L 16906-63 EWT(l)/EWG(k)/EWP(q)/EWT(m)/BDS/EEC(b)-2 AFFTC/ASD/IJP(C)
Pz-4 AT/JD
ACCESSION NR: AP3005241 S/0056/63/045/002/0046/0048

68

AUTHOR: Borovik, Ye. S.; Volotskaya, V. G.; Fogel', N. Ya.

TITLE: Deviations from Kohler's rule in pure aluminum 27

SOURCE: Zhur. eksper. i teoret. fiz., v. 45, no. 2, 1963, 46-48

TOPIC TAGS: aluminum, purity, magnetoresistance, Kohler's rule

ABSTRACT: The dependence of the resistance on the magnetic field was investigated for very pure aluminum samples at 20.4°K. The purpose was to check whether Kohler's rule is valid when $R_{273}/R_{4.2}$ exceeds 2000. A noticeable deviation from Kohler's rule is noted for high-purity aluminum sample, and it is pointed out that both the behavior of the resistance in the magnetic field and the temperature dependence of this resistance are anomalous, for reasons that are not clear as yet. Orig. art. has 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute, Acad. Sci. Ukrainian SSR)

SUBMITTED: 15Feb63 DATE ACQ: 06Sep63 ENCL: 00
SUB CODE: PH NO REF SOV: 005 OTHER: 001
Card 1/1

L 5354-66 EWT(1)/EWT(m)/EPF(n)-2/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c)
ACCESSION NR: AP5021105 JD/WW/JG/GG UR/0056/65/049/002/0438/0446

AUTHOR: Borovik, Ye. S.; Fogel', N. Ya.; Litvinenko, Yu. A.

TITLE: Study of magnetic flux jumps in hard superconductors in pulsed magnetic fields

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1965, 438-446

TOPIC TAGS: ferromagnetic superconductivity, niobium, niobium compound, superconducting alloy, phase transition

ABSTRACT: The authors investigated the magnetic-flux jumps occurring in Nb_3Sn and NbZr in pulsed magnetic fields. The samples were prepared by a procedure described elsewhere (V. D. Brodich et al., ZhETF v. 44, 110, 1963), and the technique of producing strong magnetic-flux pulses was one developed by one of the authors earlier (Borovik, with A. G. Limar', ZhETF v. 31, 939, 1961). The main measurements were made at 4.2K, but some of the measurements of Nb_3Sn were made in the temperature range 14.5--18K. The changes in flux accompanying the jumps ranged from 1×10^{-2} to 4 G-cm^2, and the jump durations ranged from 2×10^{-5} to 5×10^{-4} sec. Each jump is connected with a partial penetration of the flux into the superconductor. The relation between the jumps and the critical fields of the super-

Card 1/2

0901 1093

L 5354-66
ACCESSION NR: AP5021105

6

conductor is discussed, as are various factors governing the magnitudes and durations of the jumps. It is concluded that the experimental data do not show conclusively whether the observed flux jumps are associated with the existence of individual regions of superconductivity with different parameters, or whether they are connected with some macroscopic processes which limit the rate of phase transition. "The authors thank Professor M. I. Kaganov for a discussion of the work." Orig. art. has: 5 figures and 1 formula.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physico-technical Institute, Academy of Sciences, Ukrainian SSR)

SUBMITTED: 15Mar65 ENCL: 00 SUB CODE: SS, EM

NR REF SOV: 004 OTHER: 011

Card 2/2

L 14500-65 EWT(m) DIAAP/AFWL/SSD/ESD(t)
ACCESSION NR: AP4048632

S/0048/64/028/010/1599/1616

AUTHOR: Solov'yev, V.G.; Fogel', P.; Korneychuk, A.A.

B

TITLE: Investigation of octupole states of strongly deformed even-even nuclei /Report, Fourteenth Annual Conference on Nuclear Spectroscopy held in Tbilisi 14-22 Feb 1964/

19

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v.28, no.10, 1964, 1599-1616

TOPIC TAGS: nuclear physics, nuclear model, nuclear structure, excited state

ABSTRACT: This paper presents a systematic theoretical investigation of the energies and structures of the octupole excited states with $\lambda = 3$ and $\mu = 0,1,2,3$ in strongly deformed even-even nuclei. The calculations are performed on the basis of the superfluid model by the method of approximate second quantization. The derived secular equation is simplified on the assumption that the three octupole-octupole interaction constants (for the pp, nn, and pn interactions) are equal. Calculations were performed for the even-even nuclei with mass numbers between 150 and 190, and between 228 and 254. Nilsson wave functions were employed, with the deformation parameter δ assumed to have the same value 0.3 for all the nuclei in the lighter

1/3

group, and the value 0.2 for those in the heavier group. The octupole-octupole interaction was also assumed to be constant within each of these two groups; the interaction constant was so chosen as to give the best agreement with the experimental energies of the 0^- states. The first two roots of the secular equation were calculated for the 0^-, 1^-, 2^-, and 3^- states, and the energy values, together with the energies of the first and second bands and the corresponding experimental data (when available) are presented graphically. The calculated values of the energies of the lowest 1^-, 2^-, and 3^- states agree well with the experimental values, provided the effect of blocking is taken into account when it is important. The octupole-octupole interactions are usually important for 1^- and 2^- states, and are usually negligible for 3^- states. The structures of the octupole states are illustrated by tabulating the contributions of the various two-quasiparticle states for a number of selected nuclei. In most nuclei the lowest 0^- state is strongly collectivized, whereas the 1^- and 2^- states may be collectivized but are usually rather close to two-quasiparticle states. The 3^- states may be regarded as two-quasiparticle states with less than 1% admixture of other than the principal state. Reduced electromagnetic transition probabilities were calculated, and a future paper is promised in which these will be discussed. "In conclusion, we express our gratitude to N.N.Bogolyubov for an interesting discussion of the article, and to K.M.

L 14500-65
ACCESSION NR: AP4048632

3

Zheleznova, L.V.Korneychuk and G.Yungklaussen for assistance in performing the numerical calculations." Orig.art.has: 19 formulas, 9 figures and 13 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: NP NR REF SOV: 004 OTHER: 006

3/3

ACCESSION NR: AP4010752 S/0020/64/154/001/0072/0075

AUTHORS: Solov'yev, V.G.; Fogel', P.; Korneychuk, A.M.

TITLE: Energies of cotupole collective states with I K 1 - 0 even-even strongly deformed nuclei

SOURCE: AN SSSR. Doklady*, v. 154, no. 1, 1964, 72-75

TOPIC TAGS: energy, octupole collective state, deformed nucleus, superfluid model, excitation state

ABSTRACT: Research based on approximate second quantization was conducted on properties of atomic nuclei. Results were realized in the area of spherical nuclei where energy states and probability of electromagnetic transitions were computed. It was found that research in the area of strongly deformed nuclei is limited, but basic equations are cited and the question of excluding the heated state is studied. Based on the method of approximate second quantization in limits of superfluid models of the nucleus, energies were calculated for octupole collective states with I^{π} K=1 - 0 of even-even

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ACCESSION NR: AP4010752

strongly deformed nuclei in areas of $152 \leq A \leq 186$ and $228 \leq A \leq 254$. The behavior of collective octupole state energy with $K\pi = 0$ is explained by introducing one new constant π ; all remaining parameters are specified earlier. Microscopic treatment of the state based on the superfluid model of the nucleus differs strongly from the phenomenological treatment of the unified model of the nucleus. According to the treatment of the superfluid nucleus model, the octupole states in single nuclei are relatively low (lower than β and γ of vibration states), and possess clearly expressed collective properties, but in other nuclei such states have high energy values and are inherently similar to quasi-particle excitation states. "In conclusion we are deeply grateful to academician N.N. Bogolyubov for interesting discussions and to G. Yunklaussen for his help in conducting numerical calculations." Orig. art. has: 2 figures.

ASSOCIATION: Ob'yedinenny*y institut yaderny*kh issledovanniy (Joint Institute for Nuclear Research)
SUBMITTED: 06Jul63 DATE ACQ: 10Feb64 ENCL: 00
SUB CODE: PH NO REF SOV: 004 OTHER: 009

Card 2/2

L 61832-65 EWT(1) IJP(c)

ACCESSION NR: AP5014314 UR/0367/65/001/005/0752/0757

AUTHOR: Fogel', P. 11 6 B

TITLE: Electromagnetic transitions from collective states 21

SOURCE: Yadernaya fizika, v. 1, no. 5, 1965, 752-757

TOPIC TAGS: electromagnetic transition, collective state, Gamma vibrational state, quadrupole state, octupole state, second quantization, superfluid model

ABSTRACT: The author calculates within the framework of the superfluid model, the reduced probabilities of E3, E2, and E1 electromagnetic transitions from quadrupole or octupole states to the ground state of deformed even-even nuclei, by using approximate second quantization. The probabilities are calculated for E2 transitions from the γ vibrational states and of E2 and E1 transitions from octupole states, using parameters which were determined by the author earlier (with Solov'yev and Korneychek, Izv. AN SSSR ser. fiz. v. 28, no. 10, 1964 and elsewhere) the application of the model to E2 and E0

Card 1/2

L 61832-65

ACCESSION NR: AP5014314

5

transitions from β vibrational states is discussed, and it is shown that this case is somewhat more complicated. Comparison with experiments shows that this model gives a good explanation of the experimental data on transitions between one-phonon states and the phonon vacuum. In view of the good agreement obtained for the E2 and E3 electromagnetic transitions, it is suggested that calculations within the framework of the approximate second-quantization method are generally correct. 'In conclusions I wish to thank V. G. Solov'yev for suggesting the research and numerous discussions, and A. A. Korneychek, K. M. Zheleznova and G. Yungklauzen for assistance with the calculations.' Orig. art. has: 1 figure, 4 formulas, and 3 tables.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 09Nov64 ENCL: 00 SUB CODE: GP

NR REF SOV: 004 OTHER: 006

Card 2/2

33438

S/064/62/000/001/001/008
B110/B138

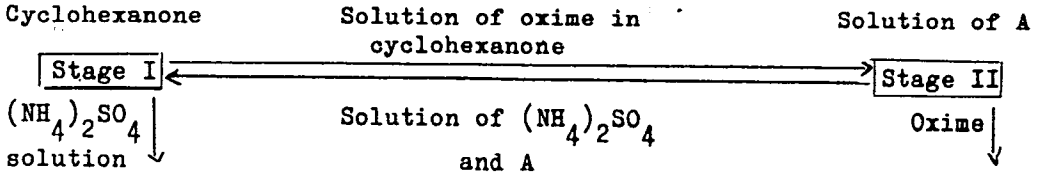
15.8080

AUTHORS: Kotlyar, I. B., Matveyeva, G. N., Smolyan, Z. S., Fogel', Ts. I., Gulyakov, V. M., Kudryavtsev, Ye. N.

TITLE: Continuous method of producing cyclohexanone oximes

PERIODICAL: Khimicheskaya promyshlennost', no. 1, 1962, 18 - 19

TEXT: A two-stage, continuous method of oxime production has been developed. Not only could it be automated, it also produces better quality oximes, and reduces losses of hydroxylamine hydrosulfate (A):



Reaction I is conducted with an excess of cyclohexane, and II with an excess of A. The formation of cyclohexanone oximes follows the reaction

Card 1/2

Continuous method of producing...

2  + $(NH_2OH)_2 \cdot H_2SO_4 \longrightarrow$ 2  + H_2SO_4 + H_2O, with H_2SO_4 being neutralized by NH_3. Thus, the acidity indicates the stage of oxime formation. Preliminary experiments were carried out to determine τ, the contact period which must elapse before the acidity of the reacting mass becomes constant, and the percentage extraction of A as dependent on its concentration in the initial sulfate solution. Results: τ = 15 - 20 min; optimum A concentration ~20 g/liter. B and the stage II sulfate solution containing 20 - 25 g/liter of A pass continuously into oximator 1 (Fig. 1) of stage I. The resulting mixture is passed into 2, where it is neutralized with gaseous NH_3. The bottom layer in separator 3, spent sulfate solution, is passed into an evaporator, the upper one (oxime solution and B) into collector 4, and thence into stage II oximator 5, where it is mixed with a new A solution. NH_3 is used in the stage II neutralizer 6. The upper oxime layer in separator 7 passes to the next stage, and the sulfate solution passes via collector 8 into oximator 1. A stoichiometric ratio must be preserved between the fresh amounts of B and A fed into 1 and 5. There are 1 figure and 2 tables.

Card 2/2

L 12120-66 EWP(e)/EWT(m)/EWP(b) GS/WH

ACC. NR: AT6000475 SOURCE CODE: UR/0000/65/000/000/0108/0112

AUTHOR: Fogel', V. 44

29
B+1

ORG: None

TITLE: Microheterogeneous structure of glass 15 44

SOURCE: Vsesoyuznoye soveshchaniye po stekloobraznomu sostovaniyu. 4th, Leningrad, 1964. Stekloobraznoye sostoyaniye (Vitreous state); trudy soveshchaniya. Leningrad, Izd-vo Nauka, 1965, 108-112

TOPIC TAGS: lithium glass, silicate glass, glass property

ABSTRACT: Glasses of the binary system lithia-silica 15 were studied. As the Li_2O content increases, the mean diameter of drop-shaped vitreous microphases, determined with an electron microscope, increases, goes through a maximum, drops to zero, then increases again. The drop-shaped phase is thought to be rich in lithium ions. A study of the solubility of binary lithia-silica glasses in dilute hydrofluoric acid showed that glasses containing 16-27 mole % Li_2O behave quite differently from the manner predicted theoretically.

Card 1/2

L 12120-66

ACC. Nr. AT6000475

This divergence can be explained only by profound changes occuring in the fine structure of the glasses during solution in HF. A study of the processes of dissolution and crystallization of lithia-silica glasses revealed that the formation and subsequent behavior of drop-shaped microphases in the glass cannot be described by purely statistical relationships; if this were the case, then as the bulk composition of the glass changed, the composition of the microphases would also change statistically. This does not take place, however; the bulk composition corresponds to definite chemical compounds, and the transition from one compound to another takes place in discontinuous fashion. Primary and secondary phase-separation processes are discussed. Orig. art. has: 8 figures.

SUB CODE: 07, 11/SUBM DATE: 22May65 / OTH REF: 008

jc

Card 2/2

FOGEL', V. O.

PA 51T14

USSR/Engineering — Jan 1948
Boilers
Heating, Industrial

"Installing Air Preheaters for Small Capacity Boilers," V. O. Fogel', Candidate Tech Sci, 8 pp

"Za Ekon Topliva" No 1

In recent survey by the Soviet State Institute of Fuel Conservation it was discovered that the majority of installations were equipped with small boiler units producing at the rate of 3 tons per hour. Of these boilers, 75% not equipped with any type of water collector or air preheaters and thus average 20-25% fuel waste. Basically, these boilers use

LC — 51T14

USSR/Engineering (Contd) — Jan 1948

low-grade coal, peat, and cordwood. This fuel contains high moisture content, and it would be wise to use preheated air. Describes installation of air preheaters for small-capacity boilers.

LC — 51T14

FOGEL', V. O.

PA 33/49T61

USSR/Engineering — Feb 49
Heating, Industrial
Heat Exchange Systems

"Heating by High-Temperature Fluid Heat-Conductors Through Natural Circulation," V. O. Fogel', Asst Prof Moscow Inst of Fine Chem Tech, 4 pp

"Prom Energet" No 2

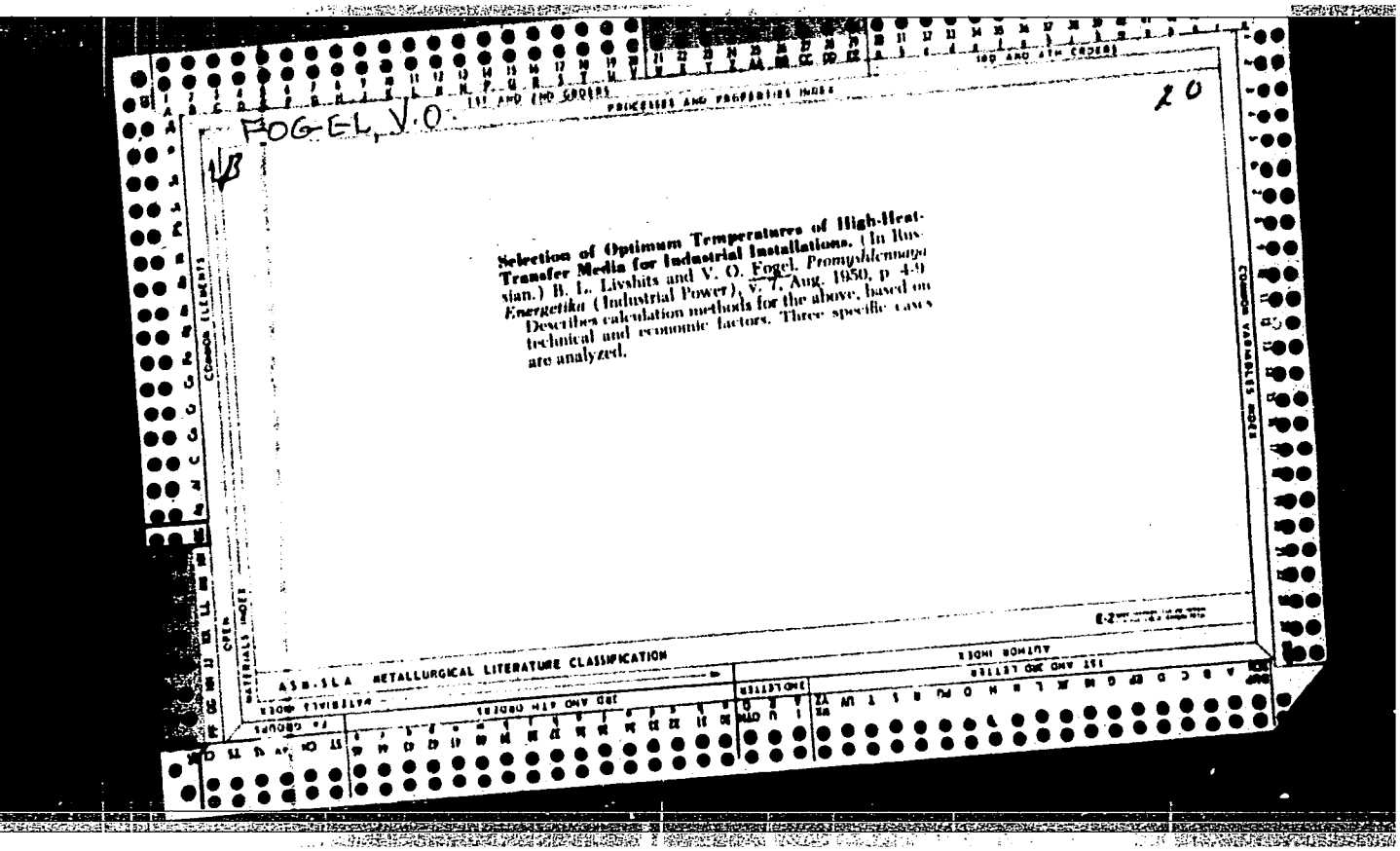
Gives skeleton design of heating installation having a heat generator, outlet and return pipe from the heat exchanger, and a condensing tank. Heat conductor is a mixture of diphenyl and diphenyloxide. Gives mathematical calculations

[redacted] 33/49T61

USSR/Engineering (Contd) — Feb 49

for diameter of conducting pipes, expenditure of circulating heat-conductor, and its temperature while entering and leaving the heat exchanging device.

[redacted] 33/49T61



FOGEL, V.O.

Selection of Optimum Temperatures of High-Heat-Transfer Media for Industrial Installations. (In Russian.) B. L. Livshits and V. O. Fogel. *Promyshlennaya Energetika* (Industrial Power), v. 7, Aug. 1950, p 4-9

Describes calculation methods for the above, based on technical and economic factors. Three specific cases are analyzed.

FOGEL', V. O.

Aug 50

USSR/Electricity - Thermodynamics
Heaters

"Selection of Optimum Temperatures for High-Boiling Intermediate Heat-Carrying Agents in Industrial Installations," B. L. Livshits, V. O. Fogel', Candidates Tech Sci, Docents, Moscow Inst of Fine Chem Technol imeni Lomonosov

"Prom Energet" No 8, pp 4-9

Gives table of design formulas from which optimum temperatures can be selected for subject agents used for heating and cooling in industrial installations. Includes proofs for these formulas which are worked out for both liquid and gas heat-carrying agents.

PA 164T24

Fogel, V. O.

Analytical methods for calculating the temperature inside rubber articles during vulcanization. V. O. Fogel.

is the max. length of heat flow ... from the nearest heated surface to the ...

$e^{-[(2n-1)\pi/2]^2 Fo}$

Solutions of these equations are also given for flat parts consisting of plies of stock differing in cond. Other equations are given for cylindrical and rectangular block shapes, with tables and curves of some consts. used. M. Anderson

159-70

FOGEL', V.O.

Effect of thermal stresses on the thermophysical characteristics of bread dough. Khleb. i kond. prom. 1 no.2:10-13 F '57. (MLRA 10:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khlebopekarnoy promyshlennosti.
(Dough) (Heat--Transmission)

FOGEL' V.O.

GENGRINOVICH, B.I.; FOGEL', V.O.

Thermophysical characteristics of industrial rubbers. Kauch.i rez.16 no.9:27-32 S '57. (MIRA 10:12)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti. (Rubber)

BIRKGAN, Yuliy Benediktovich; FOGEL', V.O., spetsred.; TEMKINA, E.S., vedushchiy red.

[High-temperature heat engineering in the oils and fats industry abroad] Vysokotemperaturnoe teplosnabzhenie v zhirovoi promyshlennosti za rubezhom. Moskva, GOSINTI, 1959. 47 p. (MIRA 13:6)

(Oil industries) (Heat engineering)

VOZNOVICH, P.D.; FOGEL', V.O., kand.tekhn.nauk, retsenzent; LUKOMSKIY, S.M., kand.tekhn.nauk, red.; LANOVSKAYA, M.R., red.izd-va; ATTOPOVICH, M.K., tekhn.red.

[Cooling of metallurgical furnaces by means of high temperature heat carriers] Okhlazhdenie metallurgicheskikh pechei vysokotemperaturnymi teplonositeliami. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1959. 228 p. (MIRA 12:7)

(Metallurgical furnaces--Cooling)

FOGEL', V.O.

Effect of thermal conditions on the heating and cooling of semilimited bodies [with summary in English]. Inzh.-fiz.zhur. no.1:87-92 Ja '59. (MIRA 12:1)

1. Institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova, Moskva.

(Heat--Conduction)

5(4) SOV/153-2-3-24/29

AUTHORS: Zanemonets, N. A., Fogel', V. O.

TITLE: A New Method of Determining the Thermal Effect of the Reaction of Rubber Vulcanization

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 3, pp 437-442 (USSR)

ABSTRACT: The new method developed by the authors is based on the determination of the heat balances from the results of thermographic analyses (method of thermographic balances). The differential equation for the heat conduction can be written down by taking into account the inner sources of heat in the following form (Ref 6):

$$\frac{\partial t}{\partial \tau} = \frac{\lambda}{c\gamma}\Delta^2 + \frac{q_v}{c\gamma} \quad (2).$$

t denotes the temperature in the point observed, τ the duration of heating,

$$\Delta^2 t = \frac{\partial^2 t}{\partial x^2} + \frac{\partial^2 t}{\partial y^2} + \frac{\partial^2 t}{\partial z^2}$$

the Laplace operator, q_v the thermal energy of the inner heat sources with respect to the units of volume and time, λ thermal conductivity of the material and $c\gamma$ its thermal capacity by volume. From this the following equation is obtained for the desired development of heat (intensity of the thermal effect of the reaction):

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$$q_v = -\lambda \Delta^2 t + c\gamma \frac{\partial t}{\partial \tau} = q_\lambda + q_{ak} \left[\frac{\text{kcal}}{\text{m}^3.\text{time}}\right] \quad (3)$$

($q_\lambda = -\lambda \Delta^2 t$ .... amount of heat flowing thru the thermal conduction during unit time from the unit volume; $q_{ak} = c\gamma \frac{\partial t}{\partial \tau}$ ... amount of heat which accumulates during the unit period in the unit volume). On the basis of the investigations carried out by the authors the temperature distribution in thin symmetrical heated plates of the rubber sample corresponds to the following formula:

$$t = t_c + (t_c + t_w) \left(\frac{x}{\delta}\right)^2 \quad (5)$$

(t_c ... temperature of the center of the plate, t_w ... temperature of the surface, x .... distance of the point observed from the center of the plate, δ ... half thickness of the plate). The amount of heat q_λ emitted due to the conduction of heat is the following for such a plate:

$$q_\lambda = -\lambda \frac{\partial^2 t}{\partial x^2} = \frac{2\lambda(t_c - t_w)}{\delta^2} = \frac{2\lambda \Delta t}{\delta^2} \left[\frac{\text{kcal}}{\text{m}^3.\text{time}}\right] \quad (6). \text{ The mean}$$

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A New Method of Determining the Thermal Effect of the Reaction of Rubber Vulcanization

temperature of the plate may be computed from the following equation: $t_m = \frac{1}{\delta}\int_0^{\delta} t\,dx = \frac{2t_c + t_w}{3} = t_c - \frac{\Delta t}{3}$ (7). ($\Delta t = t_c - t_w$.... temperature drop in the plate). From this the intensity of the heat accumulation q_{ak} in the plate may be computed:

$$q_{ak} = c\gamma \frac{\partial t_m}{\partial \tau} \left[\frac{kcal}{m^3.time}\right] \quad (8),$$

and the thermal energy of the heat sources at the moment concerned, which in this case is characterized by the intensity of the thermal effect in the vulcanization, may be determined from equation (3). The authors tested this method in the investigation of the thermal effect of the vulcanization reaction of ebonites from butadiene styrene rubbers. Satisfactory results were obtained. The apparatus used for the determination of the thermal effects is schematically represented and exactly described. Figure 4 shows one of the thermograms obtained. The method elaborated is suited for investigating the kinetics of the heat formation and for determining the initial data for the computation of the thermal effect of the vulcanization process of rubber. There are 5 figures

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A New Method of Determining the Thermal Effect of the Reaction of Rubber Vulcanization

and 8 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova
(Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov).
Kafedra teplotekhnika (Chair of Thermal Engineering)

SUBMITTED: June 24, 1958

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SOV/138-59-4-4/26

AUTHORS: Sandomirskiy, D.M., Fogel', V.O., and Mayzelis, B.A.

TITLE: The Thermo-Physical Characteristics of Latex Foams, Gels, and Sponges (Teplofizicheskiye kharakteristiki lateksnoy peny, gelya i gubki)

PERIODICAL: Kauchuk i Rezina, 1959, Nr 4, pp 13-16 (USSR)

ABSTRACT: In order to design plant for processing latex through foams and gels into latex 'sponge' it is necessary to know the thermal diffusivity α (m^2/hour), the thermal conductivity (kcal.m^{-1} hour^{-1} deg^{-1}) and the specific heat at constant volume $c\gamma$ (kcal.m^{-3} deg^{-1}) of the material at these different stages. A rapid method for measuring α and λ is necessary since the material properties change during a fairly short time. The specific heat $c\gamma$ can then be calculated from $c\gamma = \lambda/\alpha$. A "universal calorimeter" was devised as shown in Figure 1, and consists of two co-axial, open-ended cylinders between which the latex foam is gelled and vulcanised into a sponge. Heat is supplied by the spiral element (3) at the axis of the cylinders which is fed from a battery. One thermocouple (4) is mounted at mid-length on the thin walled inner cylinder and the other thermocouple (5) is inserted into the sample material at the same level

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and at radius r from the axis. The couples are connected to a galvonometer through a change-over switch. The heating element is fed with a definite current so that the specific amount of heat q_w supplied to the specimen (kcal, m^{-2} $hour^{-1}$) can be determined while the temperatures at the two thermocouples t_w and t are logged against time of heating τ. The maximum time of heating at which one can neglect heat losses from the external surface of the specimen (when the external radius R_2 is 5 times the internal radius R_1) can be calculated from Fourier criteria, and under these conditions the temperature rise of the inner cylinder wall t_w to the temperature rise of the specimen t is a function of r/R_1, and the Fourier number as shown in Eq (1). The thermal conductivity can then be deduced from Eq (2) by using the Biot number Θ_w. The actual apparatus was constructed with R_1 = 10.5 mm, r=16mm and L = 200 mm. Table 1 gives the relationships required for the solution of Eq (2) under these conditions. F_o is found from $\Delta t/\Delta t_w$ and the coefficient of thermal diffusivity α from $\alpha = F_o R_1^2/\tau$. Thermal conductivity λ follows from Eq (2). Experiments were made on "Revertex" foams,

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foamed or extended to three times the liquid volume by propeller stirring. The formulation contained thickening and gelating agents as for material intended for automobile seats. The coefficients α, λ and c_γ of the foam were determined immediately after foaming in the mixer. The whole apparatus containing the foam was then placed in a heating chamber and the temperature raised to 60°C to gel the foam, after which the same coefficients were again determined. The temperature of the heating chamber was then raised to 143°C, and the gel vulcanised into a "sponge", and the thermal characteristics determined again in this state. Considerable scatter was experienced in the measurements on the foam or the gel because of the rapid change in their characteristics while the measurements were being made. The more stable vulcanised "sponge" gave consistent results. Kinetic curves of c_γ, λ, and α against time τ are given for latex foams as mixed, and for

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the gelating foams during syneresis, in Figures 2 and 3 respectively; the former curves were obtained using material which did not contain gelating agents. The course of these curves is explained from the structural changes in the material which takes place during the processes and then demonstrate that constant characteristics are not exhibited during the gelating and vulcanising stages. Because of this, determination of the thermal coefficients was made with foams five minutes after they were mixed and extended, and with gels thirty minutes from commencement of gelation without syneresis, which periods are similar to production conditions. Table 2 gives the values of α, λ and c_γ for foam (extended to three times original liquid volume), of the gel at 60°C, and of the dry "sponge" from the same extension of foam at room temperature. Experimentally determined values are given in the table and also values calculated by an addition method working from the corresponding characteristics of latex, water and air. The difference between the experimentally determined values and the calculated values indicates that it is not

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possible to deduce values for other degrees of extension or at different temperature from one set of data, and that separate determinations should be made.
There are 3 figures, 2 tables and 8 references, 7 of which are Soviet and 1 German.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova (The M.V.Lomonosov Institute of Fine Chemical Technology, Moscow)

LIVSHITS, B.L., kand. tekhn. nauk; FOGEL', V.O., kand. tekhn. nauk

Intensification of the process in heat exchangers heated by means of high-temperature heat-transfer agents. Prom. energ. 14 no.1:34-36 Ja '59. (MIRA 12:1)

1.Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.
(Heat exchangers)

AUTHORS: Zanemonets, N. A. and Fogel', V. O. SOV/138-59-2-7/24

TITLE: The Thermo-Physical Characteristics and Thermal Effects of Vulcanization of Hard Rubber Mixtures Prepared from Butadiene-Styrene Rubbers (Teplofizicheskiye kharakteristiki i teplovyye effekty reaktsii vulkanizatsii ebonitovykh smesey iz butadiyen-stirol'nykh kauchukov)

PERIODICAL: Kauchuk i rezina, 1959, 18 Nr 2, pp 21-24 (USSR)

ABSTRACT: Experiments were carried out on the thermal conductivity of SKS hard rubber mixtures and the thermal effects of mixtures containing 6 to 53% weight of sulphur to 100% weight rubber determined. The samples were prepared in the Laboratoriya ebonita (Laboratory for Hard Rubber) of the NIIRP and the percentage of free sulphur determined in the samples after vulcanization. The thermo-physical characteristics of the samples were defined before and after vulcanization in the temperature limit between 20° and 100 to 150°C in the apparatus shown in Fig 1. The samples consisted of two foils (thickness 4 mm, width and length 40 mm) with a flat electric heater between them.

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They were placed in an ultra-thermostat where they were kept at a constant temperature (± 0.05°C). A formula is given for calculating the coefficient of heat conductivity of the samples. The composition of six tested samples is given in Table 1. The graph in Fig 2 indicates that the heat conductivity of the samples SKS-10 and SKS-30 decreases with increasing temperature, remains practically constant in the case of the sample SKS-50, and increases with increasing temperature in the samples SKS-60 and SKS-90. Addition of the accelerator diphenyl guanidine causes a decrease in the coefficient of heat conductivity of the mix with increasing temperature. After vulcanization the heat conductivity in most samples, at 153°C, was 6 to 18% higher than it was in the raw mix at the same temperature. The temperature conductivity of the same samples was found to be decreasing with the rise of temperature (Fig 3). An analogous decrease of the temperature conductivity

 was also found when investigating the thermo-physical

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characteristics of tyre mixtures. The thermal effects of the vulcanization process of hard butadiene-styrene rubber mixtures were determined by a method proposed by the authors which is based on the theory of heat conductivity of thermograms obtained during the vulcanization process. An equation for calculating the total thermal effect is given. Fig 4: a thermogram of an SKS-30 sample; Table 2: the thermo-physical characteristics of the tested samples at a temperature of 150°C. The intensity of the thermal effect of these samples was calculated and is shown in the form of a graph (Fig 5). The maximum thermal effect occurs in these mixtures 4 to 5 hours after the commencement of heating and was higher for those samples which had an increased number of double bonds. The thermal effect was observed to increase sharply when adding an accelerator to the mixture. Results of calculations of the thermal effects of vulcanization are given in Table 3

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and Fig 6. At an equal percentage content of bound sulphur the thermal effects of the vulcanization of hard butadiene-styrene rubbers are much lower than for natural rubber (about 3 times lower than data given by J. T. Blake - Ref 3, and 25% lower than values quoted by R. S. Jessup and A. D. Cummings - Ref 4). There are 6 figures, 3 tables and 4 references, 2 of which are Soviet, 2 English.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. Lomonosova (Moscow Institute for Fine Chemical Technology imeni Lomonosov)

ZANEMONETS, N.A.; FOGEL', V.O.

New method of determining the thermal effects produced by the vulcanization reaction of rubbers. Izv.vys.ucheb.zav.;khim. i khim.tekh. 2 no.3:437-442 '59. (MIRA 13:8)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V. Lomonosova, kafedra teplotekhniki.
(Rubber--Thermal properties) (Vulcanization)

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AUTHOR: Fogel', V.O.

TITLE: Investigating the Thermal Conditions of Vulcanization of Heavy Rubber Articles by the Method of Electrical Modeling

PERIODICAL: Kauchuk i rezina, 1960, No. 10, pp. 23 - 29

TEXT: The author recommends the method of electrical modeling for investigating the vulcanization conditions of compact rubber articles, which does not require thermal measurements. Thermal measurements are labor- and time consuming and do not give accurate results due to distorted temperature showings of the hot junctions in the thermocouples used. According to the authors, electrical models are conveniently used for studying the processes of heat exchange in various industries and in the rubber industry in particular. It is stated that the physical processes of the actual body can be modeled if the mathematical description of these processes in both the actual body and the model are the same. This is the case for thermal conductivity and current distribution in a circuit with distributed resistances and capacitances. It is shown that the heat conductivity processes can be modelled by the electrical analog method, i.e., the change in

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time and space of the temperature in the actual body can be evaluated from the change in the voltage U relative to time and space of the model (Refs. 1, 2). An example is given: for a uniform heat flow, the specific heat flow is determined according to Fourier's law: $q = -\lambda \frac{\partial t}{\partial x}$ (1), where λ is the heat-conducting coefficient in kcal/m · h · °C; $\frac{\partial t}{\partial x}$ is the temperature gradient in °C/m. For a circuit with distributed resistances and capacitances the current intensity is according to Ohm's law $i = -\frac{1}{R} \frac{\partial U}{\partial x}$ (2), where $R = R_{sum}/l$ is the resistance of 1 m of the circuit in ohm/m, and dU/dx is the voltage gradient in v/m. The differential equation of the heat-conducting process (Fourier's equation) for a uniform flow of heat in a body with constant heat-physical characteristics is: $\frac{\partial t}{\partial \tau} = a \frac{\partial^2 U}{\partial x^2}$ (3), where a is the coefficient of temperature-conductivity in m^2/h. The differential equation of a long line (telegraph equation) for a circuit with distributed resistances and capacitances in the absence of leakage in the capacitors can be expressed: $\frac{\partial U}{\partial \tau} = \frac{1}{RC} \frac{\partial^2 U}{\partial x^2}$ (4), where $C = C_{sum}/l$ is the capacity of

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Investigating the Thermal Conditions of Vulcanization of Heavy Rubber Articles by the Method of Electrical Modeling

of 1 m of the circuit, in farad m; $RC = R_{sum}C_{sum}/l^2$ is the product of the capacity by the resistance of 1 m of the circuit, in sec/m^2. It is pointed out that Equations 1 and 2 and also 3 and 4 are only different in nomenclature of the physical values, but are the same from the mathematical point of view. In order to make this type of comparison: 1) the initial temperature and voltage distribution must be the same, 2) the change of the temperatures and voltages at the boundary lines of the bodies must comply to the same law (Fig. 1), 3) the ratio of the experiment duration on the model τ_2 to the duration of heating and cooling of the actual body, τ_1, must not be selected arbitrarily, but based on the equality of the similarity criteria, which characterize the processes of thermal conductivity and electricity distribution in the circuit, having distributed resistances and capacitances (i.e., Fourier's criterion). $Fo_{thermal} = \frac{a\tau_1}{\delta^2}$ (5), where τ_1 the heating or cooling time of the actual body in hours, is obtained from the analysis of equation 3, for a plate with a thickness of 2δ. For a uniform electrical circuit with distributed resistances and capacitances Fourier's criterion based on an analysis of equation and assuming that $l = 2\delta$ is equal to:

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$Fo_{electr.} = \frac{3,600\,\tau_2}{RC\,\delta^2} = \frac{14,400\,\tau_2}{R_{sum}\,C_{sum}}$ (6), where τ_2 is the duration time of the experiment on the model in hours. The time range M_τ must comply with the criterion on equality of similarity $Fo_{thermal} = Fo_{electr.}$, thus, $M_\tau = \frac{\tau_2}{\tau_1} = \frac{R_{sum}C_{sum}\,a}{14,400\delta^2}$ (7), where R_{sum} and C_{sum} are the general resistance and capacitance of the model, a is the temperature-conductivity coefficient of the plate (m^2/h), and δ is half its thickness in m. The model is prepared in the form of a lattice with the resistances and capacitances located on the points. If the number of joints in the grid is equal to n, the resistance of one point is R_1 and its capacitance C_1 an expression for the time range is obtained, considering that $R_{sum} = nR_1$, and $C_{sum} = nC_1$, viz., $M_\tau = \frac{\tau_2}{\tau_1} = \frac{n^2R_1C_1a}{14,400\delta^2}$ (7a). The УСМ-1 (USM-1) universal lattice machine, intended for the approximate solution of hydrodynamic marginal problems and that of the resistance of materials is being prepared for production. Its shortcomings are its complexity, high cost and the relatively high discrepancies in the results. It is suggested that simplified electrointegrators fed by d-c and not a-c be introduced. The УИЭИ-1 (UMEI-1) unit is presented (Fig. 2) to be

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used for modeling thermal effects of vulcanization. There are no auxilliary attachments, its area is 2 m^2, the cost about 5,000 rubles. It is suggested that the BC (ГОСТ 2825-55) - VS (GOST 2825-55) type wireless carbon resistances be connected to each grid, produced with 100 to 910 kohm for an operating voltage of 350 v and hermetically sealed thermo-resistant paper capacitors of the БГТ (BGT) type with a rated maximum capacitance of 10 μf for a working voltage of 200 v d-c be used as the capacitances. In assembling the grid, special attention should be given to the distribution uniformity of the resistances and capacitances along the joints. As source of direct current the author recommends using either the 70-АМЦГ-5 ГОСТ 7534-55 (70-AMTsG-5 GOST 7534-55) type "Druzhba" battery or the alkaline cadmium-nickel battery of the 64-АКН-2,25 (64-AKN-2.25) type or the ВСА-III (VSA-III) type selenium rectifier with a filter made of a choke and two capacitors for smoothing down the pulsations of the rectified voltage. All these recommended sources yield a voltage of 60 - 80 v. D-c from the source is fed to two voltage dividers in the form of sliding wire rheostats with a resistance of 5,000 ohms. Portable multi-limit magneto-electrical d-c volt-meters are suggested for measuring the voltages at the dividers, viz., the M-106/1 (M-106/1) type

Investigating the Thermal Conditions of Vulcanization of Heavy Rubber Articles by the Method of Electrical Modeling

of 0.2 class, where for 75 v the value of one division of the mirror scale is 0.5 v. The C-95 (ГОСТ 1845-52) - S-95 (GOST 1845-52) type electrostatic voltmeter is suggested for measuring the voltages in the points of the lattice. The voltage range is selected depending on the voltage of the energy source and the magnitude of the scale of electro-measuring instruments expressed by the formula: $M_u = (U - U_o)/(t - t_o)$, and never exceeding $\frac{75}{160} = 0.47$, where 75 v is the scale of the electrostatic voltmeter and 160°C is the maximum temperature in the vulcanization of casings. The initial condition of the heating process of the compact rubber articles is usually the uniform distribution of temperature, t_o = const, which corresponds to the initial voltage of the model, $U_o = 0$. Thus, the temperature field in the actual body can be determined according to the distribution of the voltages in the model, i.e., $t = t_o + \frac{U}{M_U}$ (8). Calibrating experiments on a simplified electrointegrator УМЭИ-1 (UMEI-1) conducted with known exact analytical solutions of the temperature field equation in the plate showed that the discrepancy in determining the temperatures using the electrical model

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method did not exceed 1.5 + 2%. An example of this experiment is presented in determining the thermal conditions for the vulcanization of casings of the 260-20 size in an individual vulcanizer. Temperatures in the crown, sides and rim of the casing were determined. Summarizing the results of his experiments, the author points out that the electrical model method is less laborious and is more accurate than measuing temperatures directly with thermocouples. Using the electro-models one can also determine the effect of a change in the parameters of the heat carriers, size of the boiling chambers, composition and temperature conductivity of the component parts of the casing on the vulcanization process. There are 2 diagrams, 1 photograph, 2 graphs and 3 Soviet references.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M.V. Lomonosov)

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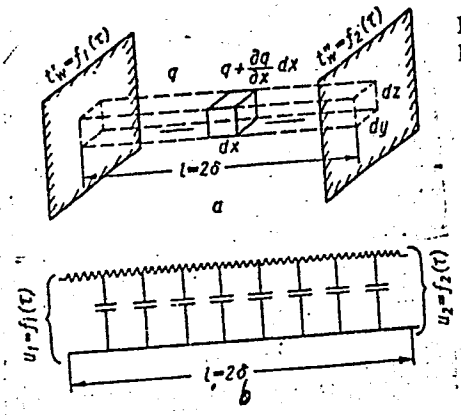

Figure 1: Diagram of a uniform plane surface heat flow (a) and diagram of its displacement. (b)

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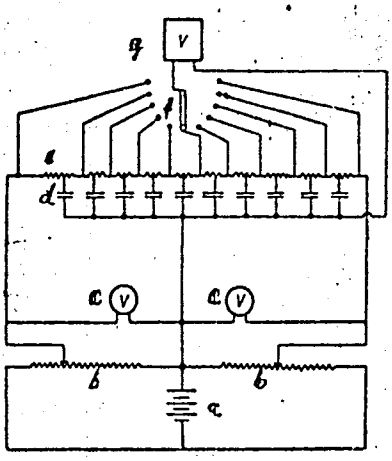

Fig. 2: Circuit diagram of a simplified model of an electrointegrator (UMEI-1) for investigating thermal conditions of vulcanization. a) energy source b) voltage dividers (sliding rheostats) c) electromagnetic voltmeters, d) constant carbon resistance, e) capacitors, f) switch, g) electrostatic voltmeter.

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AUTHORS: Sandomirskiy, D. M.; Fogel', V. O.; Khazen, L. Z., and Khu Yu-Mu

TITLE: The effect of the gelatinization process of latex on the change of its heat- and electro-conductivity

PERIODICAL: Kauchuk i rezina, no. 3, 1961, 26-30

TEXT: The authors have investigated some simple systems consisting of latex and a small quantity of gelatinizing agents, in order to determine the kinetics of the processes taking place during gelatinization, e. g., changes in the heat- and electro-conductivity and the drying of the gel formed. A spherical bicalorimeter (Fig. 1) was used for investigating the heat-conductivity. This is a metal sphere surrounded by a thin spherical layer of the investigated liquid. Under regular conditions the difference of the temperatures of the thermostat medium and the center of the bicalorimeter is expressed by the formula:

$$t_f - t = (t_f - t_0)e^{-m\tau} \quad \text{or} \quad \ln(t_f - t) = \ln(t_f - t_0) - m\tau \qquad (1),$$

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where t_f is the thermostat temperature, t_o - the initial temperature of the bicalorimeter, t - temperature of the central part of the bicalorimeter corresponding to the duration τ of its heating up, m - rate of heating. Figure 2 shows the relationship of $\ln(t_f-t)$ to the duration of the heating. The coefficient of the heat-conductivity of the liquid λ is determined from the formula:

$$\lambda = \frac{1-l}{12}(C_1\gamma_1+\frac{1-l}{l}C\gamma)D_1^2m \qquad (2),$$

where $l = D_1/D_2$ is the ratio of the internal and external diameters of the bicalorimeter; $C_1\gamma_1$ - the thermal capacity of the metal sphere; $C\gamma$ - the volumetric thermal capacity of the investigated liquid. In the experiments the method of regular heating of the bicalorimeter was supplemented by the method of stationary internal heating of the sphere, inside of which a heater was placed. For the case of stationary heating of the double-layer sphere, the heat conductivity coefficient is expressed by

$$\lambda = \frac{Q_{aver.}\cdot\delta}{F_{aver.}\cdot\Delta t} \qquad (3a).$$

The quantity of heat transmitted through the layer ($Q_{stationary}$) was determined from the expenditure of electric energy by the heater. The method of

The effect of the gelatinization process of...

regular conditions was used to determine the relationship λ of the latexes and the gelatinizing mixtures to the temperature, and the stationary conditions method was used for determining the kinetics of the λ change during the gelatinization process and that of syneresis. In order to determine the effect of gelatinization on the heat-conductivity, the kinetics of the temperature change relationship to the heat-conductivity was investigated both for revertex and latex L-7 (Figs. 3, 4). It was noted that immediately after gelatinizing agents are introduced into the latex mixture, processes occur causing a decrease in the heat-conductivity of the system. The results obtained showed that after the system has reached a certain degree of stability even before the formation of a solid gel, structures are formed in it gradually, which sharply limit its mobility in certain sections, hampering convection, diffusion and heat-exchange and thus decreasing the heat-conductivity. The change of the latter and that of the electro-conductivity does not stop after the formation of the solid gel: both the electric resistance and the heat-conductivity increase. The heat-conductivity was measured when the discharging liquid was removed from the system, in order to determine the effect of the syneresis on the thermal-conductivity (Fig. 8). It is pointed out that the change both in the heat-conductivity, as well as that of

The effect of the gelatinization process of...

the electric resistance due to syneresis begins before the removal of the liquid phase becomes apparent. A study on the change in the electric conductivity of the latex gels, when these dry out showed that this process differs from the drying out of the latex in the usual film-formation. The absence of a change in the concentration at the moment of gelatinization brings about the condition, whereby the fact of gel formation proper does not affect the relationship of the electric resistance to the moisture content in the system. There are 6 graphs, 2 diagrams and 6 references: 5 Soviet, 1 English.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov)

LIVSHITS, B.L.; FOGEL', V.O.

Relation between the mixers and the heat exchange in a reactor with welded semitubes. Lakokras. mat. i ikh prim. no.5:70-74 '61. (MIRA 15:3)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

(Heat exchangers) (Paint machinery)

23424

S/094/61/000/008/002/003
E194/E484

11.3900

AUTHORS: Livshits, B.L., Candidate of Technical Sciences and Fogel', V.O., Candidate of Technical Sciences

TITLE: Liquid ditolylmethane, a new high-temperature heat transfer medium

PERIODICAL: Promyshlennaya energetika, 1961, No.8, pp.23-27

TEXT: High-temperature heat transfer media of current industrial application include mineral oils, glycerine, silicones, diphenyl mixture, molten salts and liquid metals; new types of heat transfer media are being introduced, namely aromatic oils and ditolylmethane. For industrial processes in the temperature range 250 to 300°C, normal mineral oils and glycerine are of inadequate thermal stability, whereas molten salts are only suitable for temperatures above 385°C. None of the existing heat transfer media adequately covers the range 250 to 300°C. New types of fluid being developed for this application in the USSR and abroad include hydrocarbons of the diphenylmethane series which are synthesized in the USSR and aromatic oils such as mobiltherm 600. The hydrocarbon of the diphenylmethane series of the greatest thermal stability is ditolylmethane, the principal

Card 1/4

Liquid ditolylmethane ...

physical characteristics of which are given in Table 2. In order to investigate the problems associated with the application of liquid ditolylmethane, the Moscow Institute of Fine Chemical Technology imeni Lomonosov (Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova) made a pilot heat transfer rig. The coil, heated by town gas, has a thermal rating of 10000 kcal/hour. In the tests, cotton seed and castor oil were heated in the kettle to a temperature of 260°C by liquid ditolylmethane at a maximum temperature of 320°C. Design details of the plant used are given. The tests on this equipment lasted 18 months with many starts and stops. The number of hours during which the ditolylmethane reached temperatures up to 320°C was 700 hours. The most important property of high temperature organic heat transfer media is the thermal stability. During the 18 months operation the viscosity of the ditolylmethane rose by 5 - 10% which should correspond to a resin content of 3 - 6%. According to existing rules, a heat transfer medium need be changed only when the resin content is greater than 10%. To check this point the resin content of the ditolylmethane was specially determined and it was found to have

risen to just less than 5% whilst the coke number rose from 0 to 0.67%. Thus the thermal stability of ditolylmethane at temperatures up to 320°C was completely satisfactory. The heat transfer rate was adequate with a flow speed of 0.48 m/sec in the coils. The heat transfer coefficient results are in good agreement with data calculated by the usual procedure using the tabulated data given. Ditolylmethane is better than the usual diphenyl mixture in flash point and similar properties. It is accordingly recommended that liquid ditolylmethane should be used for heating and cooling of high temperature industrial heat exchange equipment. There are 3 figures and 2 tables.

Table 2. Thermal and physical properties of liquid ditolylmethane

Legend: 1 - temperature °C; 2 - saturation pressure, atm; 3 - specific gravity of liquid kg/m^3; 4 - true specific heat of liquid, kcal/kg°C; 5 - liquid enthalpy kcal/kg; 6 - thermal conductivity of liquid kcal/m.hr°C; 7 - dynamic viscosity of the liquid x 10^6 kg.sec/m^2; 8 - kinematic viscosity of the liquid x 10^6 m^2/sec. 9 - Prandtl's criterion.

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S/094/61/000/008/002/003
E194/E484

Liquid ditolylmethane ...

Температура t, °C	Давление насыщ. пара P, атм	Удельный вес жидкости γ, кг/м³	Истинная теплоемкость жидкости C_p, ккал/кг·°C	Энтальпия жидкости i, ккал/кг	Температуропроводность жидкости χ, ккал/м·ч·°C	Динамическая вязкость жидкости, $\nu \cdot 10^6$, кг·сек/м²	Кинематическая вязкость $N \cdot 10^6$, м²/сек	Критерий Прандтля Pr
20	—	983	0,385	7,4	0,114	485	4,84	57,8
30	—	976	0,399	11,3	0,112	391	3,93	49,1
40	—	968	0,412	15,5	0,110	316	3,20	41,7
50	—	960	0,426	19,6	0,108	258	2,69	35,9
60	—	953	0,440	23,9	0,106	211	2,17	30,9
70	—	946	0,453	28,4	0,104	179	1,86	27,5
80	—	938	0,467	33,0	0,103	152	1,59	24,3
90	—	930	0,480	37,7	0,101	129	1,36	21,6
100	—	922	0,494	42,6	0,099	112	1,19	19,7
110	—	914	0,508	47,6	0,097	97,7	1,05	18,0
120	—	906	0,521	52,8	0,095	85,6	0,927	16,6
130	—	898	0,535	58,0	0,093	75,6	0,826	15,3
140	—	889	0,548	63,4	0,091	67,3	0,742	14,3
150	—	880	0,562	69,0	0,089	60,4	0,673	13,5
160	—	872	0,576	74,7	0,087	54,5	0,613	12,7
170	—	864	0,589	80,5	0,085	49,5	0,562	12,1
180	—	855	0,603	86,5	0,083	45,1	0,518	11,6
190	—	846	0,616	92,6	0,081	41,3	0,479	11,1
200	—	837	0,630	98,8	0,079	38,1	0,447	10,7
210	—	828	0,644	105,2	0,077	35,3	0,419	10,4
220	—	819	0,657	111,7	0,076	32,8	0,393	10,0
230	—	810	0,671	118,3	0,074	30,6	0,370	9,79
240	—	801	0,684	125,1	0,072	28,7	0,351	9,63
250	—	792	0,698	132,0	0,070	27,1	0,336	9,54
260	—	784	0,712	139,1	0,068	25,5	0,319	9,43
270	—	773	0,725	146,3	0,066	24,2	0,307	9,38
280	—	764	0,739	153,6	0,064	23,0	0,295	9,37
290	0,90	754	0,752	161,1	0,062	21,9	0,285	9,37
300	1,10	744	0,766	168,6	0,060	21,0	0,277	9,46
310	1,35	734	0,780	176,3	0,058	20,1	0,269	9,54
320	1,62	725	0,793	184,2	0,056	19,3	0,261	9,64
330	1,96	715	0,807	192,2	0,054	18,6	0,255	9,81
340	2,34	705	0,820	200,4	0,052	17,9	0,249	9,97
350	2,79	695	0,834	208,6	0,050	17,3	0,244	10,2

Card 4/4

LIVSHITS, B.L.; FOGEL', V.O.

Intensifying the heating of reactors when liquid high temperature heat carriers are used. Lakokras.mat.i ikh prim. no.1:74-78 '62. (MIRA 15:4)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova.
(Chemical reactors) (Liquid fuels)

FOGEL', V.O.; ALEKSEYEV, P.G.

New compound method for determining the thermophysical characteristics of polymers and their relation to the parameters of the external medium, i.e., temperature and pressure. Inzh.-fiz. zhur. 5 no.2: 35-41 F '62. (MIRA 15:1)

1. Institut tonkoy khimicheskoy tekhnologii imeni M.V.Lomonosova, Moskva.

(Polymers--Thermal properties)

S/138/62/000/005/007/010
A051/A126

AUTHORS: Fogel', V.O.; Lepetov, V.A.; Agayants, I.M.

TITLE: Thermophysical characteristics of raw rubber mixes and their relation to temperature

PERIODICAL: Kauchuk i rezina, no. 5, 1962, 26 - 29

TEXT: The thermal and temperature-conductivity, as well as the thermal capacity of raw rubber mixes were determined experimentally at various temperatures. Four raw tire mixes, based on СКС-30 АРМ (SKS-30ARM) and NR were used as investigating materials in addition to one vulcanized mix (casing), based on SKS-30ARM for reference. The method used to investigate ebonite mixes was used. A new calorimeter (Fig. 1) was developed for determining the thermal capacity. Ethyl glycol served as the calorimetric fluid. A comparison of the thermal coefficients of tire mixes based on SKS-30ARM and NR showed that these, as a rule, are higher than those for mixes based on SKS-30ARM. The authors conclude that the thermal conductivity of the raw tire mix, with a temperature range of 30 - 100°C, changes very slightly. This leads to the possibility of calculating the

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Thermophysical characteristics of raw rubber ....

temperatures in the vulcanized articles, using the Furje differential equation. The temperature conductance of the raw tire mixes drops and the thermal capacity increases with the rising temperature.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova (Moscow Institute of Fine Chemical Technology im. M.V. Lomonosov)

Thermophysical characteristics of raw rubber ....

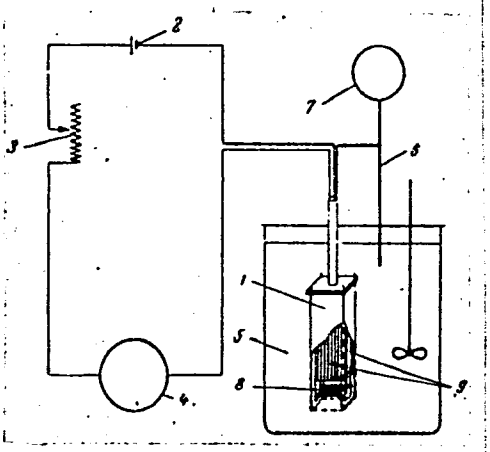

Figure 1: Diagram of the set-up for determining the thermal capacity of tire mixtures.
1 - calorimeter; 2 - battery; 3 - rheostat; 4 - amperemeter; 5 - thermostat;, 6 - thermocouple; 7 - mirror galvanometer; 8 - heater; 9 - sample.

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S/170/62/005/002/002/009
B104/B138

15.8470

AUTHORS: Fogel', V. O., Alekseyev, P. G.

TITLE: A new method permitting simultaneous determination of the thermophysical characteristics of polymers and their dependence on the temperature and pressure of the external medium

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 2, 1962, 35 - 41

TEXT: A new method permitting the simultaneous determination of the coefficients of heat conduction and thermal diffusivity of high polymers has been developed at the Kafedra promyshlennoy teplotekhniki Moskovskogo instituta tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Department of Industrial Heat Engineering of the Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov). Measurements can be made above and below 0°C and at different external pressures. Two plates 3 - 8 mm thick (2) (Fig. 1) are pressed into metallic mold (3) by means of plate (1). A quick-response heater (5) is inserted between the two plates. The temperature is measured with thermocouples (4). At the beginning of the experiment, the temperature of the samples is equal to that of the liquid in the

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A new method permitting ...

thermostat. The heater imparts a constant specific heat current q'_w = const to the internal surfaces of the two plates. By separating the variables one obtains

$$t - t_0 = \frac{q_w \delta}{\lambda}\left\{\frac{x}{\delta} - \frac{8}{\pi^2}\sum_{n=1}^{\infty}\frac{(-1)^{n-1}}{(2n-1)^2}\sin\left[(2n-1)\frac{\pi}{2}\frac{x}{\delta}\right]\times\right. \qquad (1)$$

$$\left.\times\exp\left[-(2n-1)^2\frac{\pi^2}{4}\frac{a\tau}{\delta^2}\right]\right\},$$

for the case under consideration, where t is the plate temperature at a point at a distance x from the external surface, t_0 is the temperature of the liquid in the thermostat, $q_w = q'_w$, δ is the plate thickness in m, λ is the heat conduction coefficient, a is the coefficient of thermal diffusivity, and τ is heating time in hrs. With the notations $\theta = (t-t_0)\lambda/q_w\delta$, $\mu_n = (2n-1)\pi/2$, and $a\tau/\delta^2 = Fo$, this equation acquires the form

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A new method permitting ...

$$\theta = \frac{x}{\delta} - 2\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{\mu_n^2} \sin\left(\mu_n \frac{x}{\delta}\right) \exp\left(-\mu_n^2 \mathrm{Fo}\right). \qquad (1a).$$

The heated surface of an unbounded plate is then given by

$$\theta_w = \frac{(t_w - t_0)\lambda}{q_w \delta} = 1 - 2\sum_{n=1}^{\infty} \frac{\exp(-\mu_n^2 \mathrm{Fo})}{\mu_n^2} =$$

$$= 1 - 0{,}8106\left[\exp\left(-2{,}4674\,\mathrm{Fo}\right) + \frac{1}{9}\exp\left(-22{,}2066\,\mathrm{Fo}\right) + \right. \qquad (2).$$

$$\left. + \frac{1}{25}\exp\left(-88{,}6904\,\mathrm{Fo}\right) + \ldots\right].$$

Results obtained between -60 and +200°C and at pressures up to 60 kg/cm^2 are in good agreement. The Komitet po delam izobreteniy i otkrytiy pri SM SSSR (Committee for Inventions and Discoveries at the Council of Ministers USSR) certified the authors's certificate no. 693453/26 for the apparatus described above. There are 2 figures, 2 tables, and 5 references: 4 Soviet and 1 non-Soviet.

Card 3/3 4

33470

S/170/62/005/002/002/009
B104/B138

A new method permitting ...

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova, g. Moskva (Institute of Fine Chemical Technology imeni M. V. Lomonosov)

SUBMITTED: July 28, 1961

Card 4/5

FOGEL', V.O.

Heat exchange in the vulcanization of tire castings in an expandor-vulcanizer. Kauch i. rez. 21 no.7:30-34 Jl '62. (MIRA 15:7)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.
(Tires, Rubber) (Vulcanization)

S/032/62/028/012/022/023
B104/B166

AUTHORS: Fogel', V. O., and Alekseyev, P. G.

TITLE: A device for simultaneously determining the coefficients of heat conductivity and of thermal diffusivity of polymers

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 12, 1962, 1528-1529

TEXT: Two plates (1) of the material to be tested are clamped together in the device (Fig.). Between them is a flat electrical heater which supplies a constant quantity of heat per unit time to the plates. The thermostat (7) keeps the outer surface of the plates at a constant temperature. The temperature drop across the plates is determined with thermocouples. The Fourier number and $\tan\alpha = \Delta F_o/\Delta\tau$ are determined, and the relation $F_o = f(\tau)$ is plotted from the temperature drop using a method developed in a previous paper (V. O. Fogel', P. G. Alekseyev. Inzhenerno-fizicheskiy zhurnal, v. 5, no. 2 (1962)). The thermal diffusivity $a = \delta^2\tan\alpha$ and the heat conductivity $\lambda = q_w\delta/\Delta t_{steady}$ can be calculated if the thickness δ of the specimen is known. The device can be used at temperatures between -60 and +200°C and at

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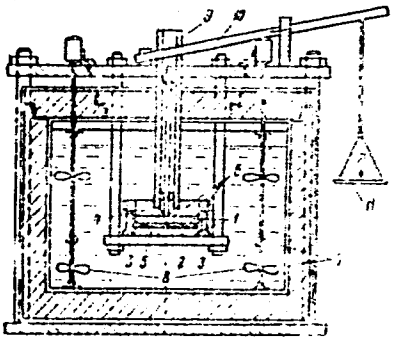
A device for simultaneously...

pressures of from 1 to 100 kg/cm^2. There is 1 figure.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

Fig. Device for simultaneously determining the thermal diffusivity and heat conductivity of polymers.



Card 2/2

S/153/62/005/006/010/015
E075/E336

AUTHORS: Fogel', V.O. and Alekseyev, P.G.

TITLE: Investigation of the dependence of thermophysical characteristics of polymeric materials on temperature and pressure

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, khimiya i khimicheskaya tekhnologiya, v. 5, no. 6, 1962, 965 - 970

TEXT: A new method and apparatus were developed to investigate the dependence of heat conductivity and heat capacity of polymer sheets, 4 - 6 mm thick, on temperature (-60 to 200 °C) and pressure (up to 150 kg/cm^2). In the apparatus the sheets are inserted in a metal press immersed in a thermostatic bath at t_o, °C. A thin electric heater of low thermal inertia is placed between the sheets. Heat is generated by the element for various time intervals, which produces a temperature difference across the sheets of $\Delta t = t'_w - t_o$ measured by a differential thermocouple. The coefficients of heat and temperature conductivity of an

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S/153/62/005/006/010/015
E075/E336

Investigation of ....

organic glass and protective rubber elastomer based on СКС-30 АМ (SKS-30 AM) increase slightly with pressure at a constant temperature. Initial pressures of 2 to 10 kg/cm^2 are necessary to obtain good thermal contact between the polymer samples, the heater and the compressing surfaces. The temperature conductivity decreases with increasing temperature (from 30 - 100°C which is explained by the increasing heat capacity of the polymers. The heat conductivity increases with temperature initially but decreases slightly at the higher temperatures. An increase in pressure is followed by a slight increase of the heat conductivity and heat capacity of the tested polymers. There are 4 figures and 1 table.

ASSOCIATION: Kafedra promyshlennoy teplotekhniki, Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova (Department of Industrial Heat Engineering, Moscow Institute of Fine Chemical Technology im. M.V. Lomonosov)

SUBMITTED: November 9, 1961

Card 2/2

FOGEL', V. O.; ALEKSEYEV, P. G.

Device for simultaneous determination of the coefficients of heat and temperature conductivity of polymeric materials. Zav. lab. 28 no.12:1528-1529 '62. (MIRA 16:1)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova.

(Polymers—Thermal properties)

GRANOVSKAYA, I.R. , inzh.; FOGEL', V.O., dotsent

Devices for heating high-temperature liquid heat carriers. Prom. energ. 18 no.11:22-26 N '63. (MIRA 16:12)

L 15701-65 EWT(m)/EPF(c)/T Pr-4 ASD-3/AFFTC/APGC/AEDC(a)/SSD/BSD/ASD(f)-2/AS(mp)-2/ASD(p)-3 BW/DJ/WE

ACCESSION NR: AP4047529 S/0094/64/000/010/0033/0037

B

AUTHOR: Fogel', V. O. (Candidate of technical sciences); Granovskaya, I. R. (Engineer)

TITLE: Using aromatized petroleum oils as a high-temperature heat carrier

SOURCE: Promy*shlennaya energetika, no. 10, 1964, 33-37

TOPIC TAGS: heat carrier, heat transfer, petroleum oil / AMT-300 petroleum oil

ABSTRACT: The experimentally determined thermophysical characteristics of Soviet AMT-300 petroleum oil and American M600 ("Mobiltherm") oil are tabulated; the characteristics of both oils are very close except for the vapor pressure (lower with AMT-300) and the congelation point (-30C for AMT-300 and -7C for M600). The thermal stability of both oils was tested by residual-gas pressure in a flask with heated oil; at temperatures under 320C, the stability of AMT-300 oil was found to be somewhat higher than that of M600. Further experiments involved circulating the oil through a closed tubing circuit for 750 hrs

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ACCESSION NR: AP4047529

at 300, 315, and 330C. It was found that during the first 100 hrs, the heat-transfer factors considerably decreased due to formation of a carbon-film deposit on the inside of the tubing. The coking value, resin content, and viscosity were measured at various stages of the experiment; the deposit thickness was 0.04 and 0.05 mm for AMT-300 and M600 oils, respectively. The authors' conclusions are: (1) AMT-300 is equivalent to or has an advantage over M600; (2) AMT-300 may be used as a heat-transfer agent at 200--315C in industrial installations. Orig. art. has: 2 figures, 9 formulas, and 3 tables.

ASSOCIATION: Moskovskiy aviatsionny*y institut (Moscow Aviation Institute); Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute of Fine Chemical Engineering).

SUBMITTED: 00 ENCL: 00

SUB CODE: FP, TD NO REF SOV: 001 OTHER: 000

ACC NR: AP6034207 SOURCE CODE: UR/0153/66/009/004/0673/0675

AUTHOR: Fogel', V. O. (Deceased); Ovchinnikov, V. A.

ORG: Department of Industrial Heat Engineering, Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov (Kafedra promyshlennoy teplotekhniki, Moskovskiy institut tonkoy khimicheskoy tekhnologii)

TITLE: New method for determining the thermal stability of high-temperature liquid heat carriers

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 4, 1966, 673-675

TOPIC TAGS: heat carrier, activation energy, thermal stability, surface scaling

ABSTRACT: A new method has been developed for determining the thermal stability of high-temperature liquid heat carriers (HLH). It is based on the following assumptions: (1) The HLH circulates in a closed testing unit; (2) A definite and constant amount of heat is supplied to the unit in the experimental part; (3) The decomposition of the HLH is continuously checked by determining the efficiency of the heating surface, defined as the ratio of the experimental value of the heat transfer coefficient to the value of this coefficient for a clean surface. It is shown that even a small thickness of scale, of the order of 10 microns, causes a considerable decrease (11-30%) in the efficiency of the heating surface, so that this quantity can be used for determining the thermal stability of the HLH. The rate of decomposition of the HLH is ob-

ACC NR: AP6034207

tained from the rate of change of the scale thickness. The proposed method also permits the determination of the activation energy of decomposition of the HLH. Orig. art. has: 4 figures and 8 formulas.

SUB CODE: 07/ 20/ SUBM DATE: 25Jan65/ ORIG REF: 007/ OTH REF: 001

Card 2/2

Abstract

S/147/60/000/02/012/020
E031/E413

AUTHOR: Fogel', Ya.L. (Deceased) (Moscow)

TITLE: On the Turbulent Flow of a Fluid

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, 1960, Nr 2, pp 105-109 (USSR)

ABSTRACT: The method is based on an empirical relation between the forces of apparent viscosity caused by the turbulent mixing and the time mean of the velocities. Flow in a circular cylindrical pipe is considered in order to determine the viscosity coefficient of the mean flow. First, the velocity distribution is determined by consideration of the equilibrium of an elementary volume of fluid. The analysis is carried out for two simple laws relating the viscosity to the mean velocity. The results are compared with experimental data. For the first law good agreement is achieved at large Reynolds numbers but for the second law agreement throughout the turbulent domain is achieved; there is divergence in the laminar domain. The second law can be used to solve the problems of turbulent flow between plane parallel walls and between co-axial cylinders. There

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/B