16(1)

AUTHOR: Malinskiy, K.K. SOV/43-59-1-15/17

TITLE: On the Form of the Second Variation of a Multiple Integral With Varied Domain of Integration (O vide vtoroy variatsii kratnogo integrala s var'iruyemoy oblast'yu integrirovaniya)

PERIODICAL: Vestnik Leningradskogo universiteta, Seriya matematiki, mekhaniki i astronomii, 1959, Nr 1(1), pp 140-144 (USSR)

ABSTRACT: The author considers the integral

$$I(\alpha) = \int_{T_\alpha} F(x,u(x,\alpha), u_x(x,\alpha))dx$$

where F is four times continuously differentiable with respect to all arguments; $x = (x_1,\ldots,x_m)$, $u_x = (u_{x_1},..,u_{x_m})$, $dx = (dx_1,.., dx_m)$. It is stated that the second variation is

$$\delta^2 I = \alpha^2 H[v]\left(\frac{D[v]}{H[v]} - 1\right), \text{ where}$$

$$D[v] = \int_T \left(\sum_{r,l=1}^{m} a_{rl} v_{x_r} v_{x_l} + qv^2\right) d\tau + \int_S Bv^2 d\sigma$$

Card 1/2

On the Form of the Second Variation of a Multiple Integral With Varied Domain of Integration

SOV/43-59-1-15/17

$$H[v] = \int_T \varrho v^2 d\tau \quad , \quad S \text{ is the boundary of } T.$$

The author uses the results and denotations of S.L. Sobolev [Ref 4] and O.A. Ladyzhenskaya [Ref 3].
There are 4 Soviet references.

Card 2/2

MALINSKIY, N.Kh.; TURAYEV, N.P.

Treatment of patients suffering from trophic ulcers of the lower extremities. Nauch.trudy Chetv.Mosk.gor.klin.bol'. no.1:240-251 '61. (MIRA 16:2)

1. Iz 2-go khirurgicheskogo otdeleniya (zav. otdeleniyem - N.Kh. Malinskiy), Moskovskoy gorodskoy klinicheskoy bol'nitsy No.4 (glavnyy vrach G.F. Papko) i kafedry obshchey khirurgii lechebno-go fakul'teta 2-go Moskovskogo gosudarstvennogo meditsinskogo instituta imeni N.I. Pirogova (zav. kafedroy - prof. Ivanov, V.A.).
(EXTREMITIES, LOWER--ULCERS)

MALINSKIY, N.Kh.

New cylinder for drop intravenous transfusion of fluids in combination with blood. Nauch. trudy Chetv. Mosk. gor. kon. bol'. no.1:252-255 '61. (MIRA 16:2)

1. Iz Moskovskoy gorodskoy klinicheskoy bol'nitsy No.4 (glavnyy vrach G.F. Papko), zaveduyushchiy kabinetom perelivaniya krovi - N.Kh. Malinskiy.

(BLOOD--TRANSFUSION) (FLUID THERAPY)
(MEDICAL INSTRUMENTS AND APPARATUS)

IVANOV, V.A., prof.; MALINSKIY, N.Kh.

Treatment of patients with trophic ulcers of the lower extremities.
Khirurgiia no,8:39-45 Ag '61. (MIRA 15:5)
(EXTREMITIES, LOWER—ULCERS)

ACC NR: AP6005350 SOURCE CODE: UR/0413/66/000/001/0092/0093

AUTHORS: Kaplunov, A. I.; Veksler, B. Ye.; Malinskiy, S. A.; Tsvetkov, V. S. 36

ORG: none

TITLE: Multichannel device for seismic logging of bores. Class 42, No. 177642 [announced by "Nefteprибor" Factory (Zavod "Nefteprибor")]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 92-93

TOPIC TAGS: seismologic instrument, electronic circuit

ABSTRACT: This Author Certificate presents a multichannel device for seismic logging of bores. The device contains seismic detectors, amplifiers, carrier frequency oscillators, electric filters, modulators, demodulators, a magnetic recorder, and a power supply. To broaden the dynamic range of the received signals, electrical sections are connected in each channel between the modulator tube and the communication line networks (see Fig. 1). The sections are made of crystal diodes (connected in opposition) and resistors and are connected to the programming

Card 1/2 UDC: 550.340.84

ACC NR: AP6005350

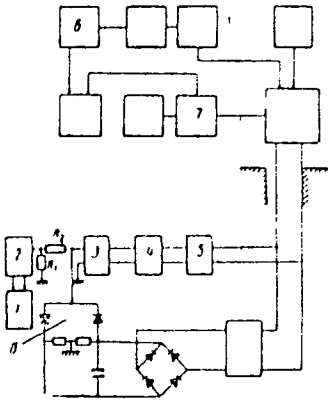


Fig. 1. 1 - seismic detector; 2 - amplifier (modulator); 3 - amplifier; 4 - carrier frequency oscillator; 5 - filter; 6 - demodulator; 7 - recorder; 8 - electrical sections

device. Orig. art. has: 1 diagram.

SUB CODE: 08,09/ SUBM DATE: 19Nov64

Card 2/2

[illegible] SOURCE CODE: [illegible]

AUTHOR: [illegible] A.; [illegible], N. B.; [illegible], B. Ye.; [illegible], S. A.

ORG: none

TITLE: Device for summing seismic signals. Class 42, No. 184468

SOURCE: Izobret prom obraz tov zn, no. [illegible], 1966, 95

TOPIC TAGS: seismologic instrument, magnetic recording

ABSTRACT: This Author Certificate presents a device for summing seismic signals, containing a magnetic drum with reproducing heads, signal amplifiers, step probes, a [illegible] delay line, a summed signal amplifier, a chart recorder, a chart drum, and a time relay. To speed the processing and analysis of material with production of [illegible], the coil of the step probe switching the magnitude of the summation [illegible] shift is connected through a pulse frequency divider to the coil of the step probe switching the summation base center (see Fig. 1). To obtain summed tapes with the summation base length increased in time, the extremes of the summed channels are connected to the delay line by relay contacts controlled by the time relay.

Card 1/2 UDC: 550.340.19

L 20000-67
ACC NR: AP6029934

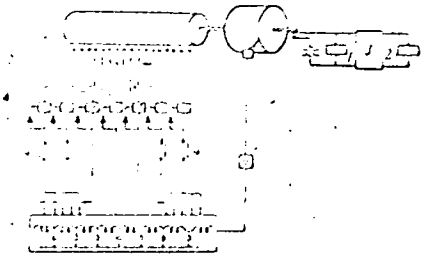


Fig. 1. 1 and 2 - coils of step probes; 3 - frequency divider; 4 - relay contacts

Orig. art. has: 1 diagram.

SUB CODE: 08/ SUBM DATE: 29Jul65

Card 2/2

16

SOURCE CODE: UR/0413/66/000/015/0094/0094

AUTHOR: [illegible] Ye.; [illegible]kov, V. S.; Ayzman, Yu. A.; Sokolinskiy, Ye. A.; [illegible] A. I.; Fedorov, V. M.; Ivanov, A. M.; Malinskiy, S. A.; [illegible]vskiy, V. V.; [illegible]k, V. Kh.; Vysotskiy, Yu. A.; Zamskiy, V. M.; Bystrov, V. V.; [illegible]ov, V. V.; [illegible], I. V.; Yevzerov, D. A.; Germanov, Yu. G.; Maksimov, M. P.; [illegible]kov, S. A.; Shchekalin, V. V.

ORG: none

TITLE: Seismic station. Class 42, No. 184466 [announced by "Neftepribor" Factory of the Trust No. 2 Miniature Administration of Mosgorsovnarkhoz (Zavod "Neftepribor" Tresta No. 2 Upravleniya priborostroyeniya Mosgorsovnarkhoza)]

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 94

TOPIC TAGS: seismologic station, seismologic instrument

ABSTRACT: This Author Certificate presents a seismic station containing a seismic signal detector, a recording amplifier unit, an oscillograph, a magnetic drum recorder, a channel reproduction unit, a control unit, a reproduction amplifier, a multichannel borehole probe, a drum with photographic paper, a retransmitting unit, and a power supply. To increase the reliability when transferring from operation with the method of reflected waves to the method of refracted waves, a filter unit is connected between the first and second stages of the recording amplifier unit. A

Card 1/2 UDC: 550.340.19

L 10661-67

ACC NR: AP6029933

modulator-demodulator unit and a reel type magnetic recorder are connected in series to the output of the recording amplifier unit. For operation with the method of refracted waves, the filter unit has frequency cutoffs of 7--30 hz, and for operation at sea--frequency cutoffs of 20--50 hz. To increase the reliability of the recorded data with operation by the method of regulated directional reception, a switching unit for the channels to be summed, a static correction unit, and a summing unit are connected in series between the magnetic drum recorder and the reproduction amplifier. To increase the reliability when transferring from operation with the method of reflected waves to seismic logging, a frequency selection unit is connected between the multichannel borehole probe and the magnetic drum recorder. To improve the quality of the recorded material, an electron beam unit for introducing static and dynamic corrections is connected between the reproduction amplifier and the drum with photographic paper.

SUB CODE: 08/ SUBM DATE: 05May65

Card 2/2

ACC NR: AP7002978 SOURCE CODE: UR/0413/66/000/024/0077/0077

INVENTOR: Veksler, B. Ye; Katkov, G. F.; Malinskiy, S. A.; Minkin, M. M.; Remennikov, V. S.; Rybakov, L. A.; Sokolinskiy, Ye. A.; Fedorov, V. N.; Shmulovich, I. Sh.; Gertsov, S. M.; Pishchulin, V. V.

ORG: None

TITLE: A seismic prospecting station. Class 42, No. 189598

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 24, 1966, 77

TOPIC TAGS: seismic prospecting, frequency divider, quartz crystal, seismologic station

ABSTRACT: This Author's Certificate introduces a seismic prospecting station containing an amplification-conversion channel, registration unit and power supply. The unit is designed for improved reliability and operational convenience. A quartz oscillator with a frequency divider system is used as a precision-frequency power supply and synchronizing unit. The oscillator is connected through amplifiers to the actuating units of the station.

SUB CODE: 08 / SUBM DATE: 04Jun65

Card 1/1

UDC: 550.340.19

ACC NR. AP6017961 SOURCE CODE: UR/0413/66/000/010/0085/0085

INVENTOR: Slutskovskiy, A. I.; Bogdanov, V. V.; Pishchulin, V. V.; Veksler, B. Ye.; Ayzman, Yu. A.; Malinskiy, S. A.

ORG: None

TITLE: Automatic gain control for amplifiers in seismic prospecting units. Class 42, No. 181828

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 10, 1966, 85

TOPIC TAGS: seismic prospecting, automatic gain control

ABSTRACT: This Author's Certificate introduces an automatic gain control for amplifiers in seismic prospecting units. The device is based on Author's Certificate No. 119689. Recording clarity with respect to amplitude is improved and the width of the illegible washout zone is reduced in the region of first arrivals by using stabilitrons in charging and discharging the filter capacitor for various purposes.

SUB CODE: 09, 08/ SUBM DATE: 29May63

Card 1/1 UDC: 534.632;681.892

ACC NR: AP6021456 SOURCE CODE: UR/0413/66/000/011/0079/0079

INVENTOR: Rapoport, M. B.; Seliverstov, B. P.; Chervonskiy, M. I.; Gurevich, B. L.; Malinskiy, S. A.; Veksler, B. Ye.; Aysman, Yu. A.; Remennikov, V. S.; Zhavoronkov, G. A.

ORG: None

TITLE: A device for automatically analyzing seismograms and constructing seismic profiles. Class 42, No. 182349

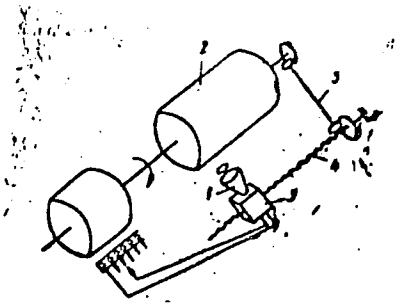
SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 11, 1966, 79

TOPIC TAGS: seismography, cathode ray tube, seismic modeling

ABSTRACT: This Author's Certificate introduces: 1. A device for automatically analyzing seismograms and constructing seismic profiles. The unit is based on Author's Certificate No. 166503. Efficiency of analysis is improved by mounting a cathode ray tube on a carriage which is moved along a photodrum by a worm gear or ratchet turned by the shaft of the photodrum. 2. A modification of this device in which measurement quality is improved by connecting a sawtooth generator through a programmed amplitude regulator to the vertical deflection system of the cathode ray tube.

Card 1/2 UDC: 550.340.84

ACC NR: AP6021456



1--cathode ray tube; 2--photodrum; 3--carriage; 4--worm shaft; 5--drive

SUB CODE: 08, 09/ SUBM DATE: 31Mar64

Card 2/2

BRAMMER, Yuriy Aleksandrovich; MALINSKIY, Vladimir Davidovich; KORNDORF, S.F., red.; TERESHIN, G.M., red.; BORUNOV, N.I., tekhn. red.

[Radio engineering] Radiotekhnika. Moskva, Gos. energ. izd-vo, 1961. 695 p. (MIRA 15:3)
(Radio)

MALINSKIY, Vladimir Davidovich; VEREVKIN, Yu.Ye., prepodavatel', retsenzent; USOV, Yu.Ye., prepodavatel', retsenzent; BASAVINA, Ye.V., red.

[Collection of laboratory papers on amplifying and radio receiving systems] Sbornik laboratornykh rabot po usilitel'nym i radiopriemnym ustroistvam. Moskva, Vysshaia shkola, 1964. 176 p. (MIRA 17:12)

MALINSKIY, Vladimir Davidovich; OSHER, David Naumovich; TEPLITSKIY, Lev Yakovlevich; VARGANOV, N.O., red.

[Radio equipment tests] Ispytaniia radioapparatury. Moskva, Energiia, 1965. 439 p. (MIRA 18:8)

MALINSKIY, V. F., kand.tekhn.nauk

Saving on nonferrous metals used in automatic equipment. Zhel. dor.transp.36 no.5:74-75 My '55. (MIRA 12:5)
(Nonferrous metals)
(Railroads--Electric equipment)

GROTE, G.V., kand.tekhn.nauk; MALINSKIY, V.F., kand.tekhn.nauk; LISOVSKIY, P.K., inzh.; OREKHOV, V.I., inzh. (Odessa)

Using magnetophone telephones as a means of communication in organizing train traffic. Zhel.dor.transp. 41 no.3:71-73 Mr '59. (MIRA 12:6)

(Railroads--Telephone)

MALINSKIY, V.F., kand.tekhn.nauk

Ensure good visibility of signal lights. Avtom. telem. i sviaz' 4 no.9:3-6 S '60. (MIRA 13:9)
(Railroads--Signaling)

MALINSKIY, V.Ye.; PROTOPOPOV, M.S.

Transporting assembled metal supports for electric power lines. Rats. i izobr. predl. v stroi. no.150:3-7 '56. (MLRA 10:5)
(Electric lines--Poles)

MALINSKIY, Ye.N., inzh. (Moskovskaya oblast')

Making reinforced concrete supports of communication lines in multiple molds. Stroi. truboprov. 5 no.4:20-21 Ap '60.
(MIRA 13:9)

(Electric lines--Poles)

MALINSKIY, Ye.N., inzh.

Thermoelectric heating of reinforcement for prestressed concrete elements. Stroi.truboprov. 6 no.7:6-8 Jl '61. (MIRA 14:8)

1. Zavod remontno-mekhanicheskiy i stroydetaley tresta Promstroymaterialy, Moskva.
(Concrete reinforcement)

MIRONOV, S.A., doktor tekhn. nauk, prof.; MALININA, L.A., kand. tekhn. nauk; LIFANOV, I.I., inzh.; MALINSKIY, Ye.N., inzh.

Dilatometric studies of structures of cement mortars subjected to various heat treatments. Trudy NIIZHB no.32:66-76 '63. (MIRA 17:1)

MIRONOV, S.A., prof., doktor tekhn. nauk; MALININA, L.A., kand. tekhn. nauk; MALINSKIY, Ye.N., inzh.

Method of determining deformations of various concretes in the process of autoclaving. Stroi. mat. 10 no.6:39-40 Je '64. (MIRA 17:10)

MIRONOV, S.A., doktor tekhn. nauk; MALININA, L.A., kand. tekhn. nauk; MALINSKIY, Ye.N., inzh.

Role of the excess pressure of air-steam medium in the process of thermal treatment of building materials. Stroi. mat. 11 no. 12:8-11 D '65. (MIRA 18:12)

MALINSKII, Yu. M

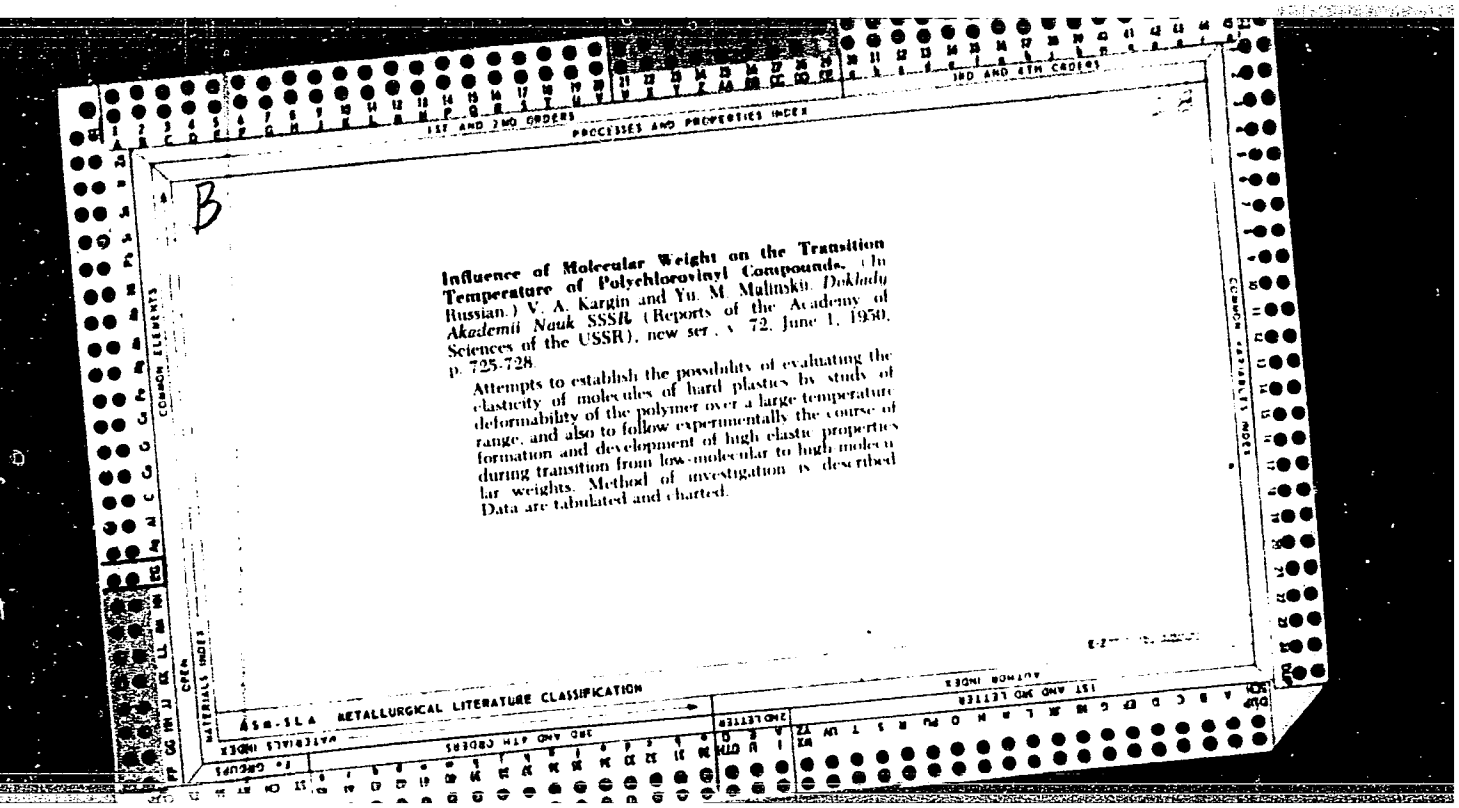
Y

PROCESSES AND PROPERTIES INDEX

1-5-47

Determination of stresses in sheet glass. S. G. Lioz-NYANSKAYA AND Yu. M. MALINSKII. *Steklo i Keram. Prom.*, 1944, No. 9, pp. 6-7.—This method was especially designed for use by unskilled personnel; the apparatus is simple and includes a polariscope with a sensitive shade. The shade can be any birefracting mineral that gives a red or violet coloration to the bundle of white light passing through it. It is possible to observe very small differences in the polarized rays. From the colored view obtained it is possible to estimate with sufficient accuracy the extent of the stresses and the nature of the annealed edges. The results are used in cold cutting to minimize breakage. 1 diagram. B.Z.K.

INDEX VARIABLES PAPER



B

Influence of Molecular Weight on the Transition Temperature of Polychlorovinyl Compounds. (In Russian.) V. A. Kargin and Yu. M. Malinskii. *Doklady Akademii Nauk SSSR* (Reports of the Academy of Sciences of the USSR), new ser., v. 72, June 1, 1950, p. 725-728.

Attempts to establish the possibility of evaluating the elasticity of molecules of hard plastics by study of deformability of the polymer over a large temperature range, and also to follow experimentally the course of formation and development of high elastic properties during transition from low-molecular to high molecular weights. Method of investigation is described. Data are tabulated and charted.

CA

J1

Influence of the molecular weight on the transition temperatures of polystyrene. V. A. Kargin and Yu. M. Malinskil. *Doklady Akad. Nauk S.S.S.R.* 72, 915–18 (1950); cf. preceding abstr.—The dependence of the vitrification temp. t_g and of the temp. of beginning flow t_f on the degree of polymerization n was detd. for polystyrene samples of different mol. wts. M in the same way as previously for polyvinyl chloride, by the temp. dependence of the deformation produced by a definite load. The curve of t_g as a function of log n has the same shape as for polyvinylchloride, i.e., it rises steeply with log n and then levels off. At low n, the curve of t_f first coincides with t_g, but, at the point where t_g begins to level off, it first deviates in the direction of continued increase, then levels off itself, and finally resumes its rise. This particular behavior of the t_f curve of polystyrene can be explained on the assumption of the existence of a crystn. temp. High elasticity cannot appear as long as M is low enough for the fusion of the cryst. substance to take place at a temp. higher than the t_f of these samples in the amorphous state; such low-M polymers go over directly from the solid to the viscous-liquid state. In the series of polystyrene samples examd., high elasticity appeared only at n greater than 1000. The crystallinity of polystyrene, involving as it does freezing and fusion effects, refers to the chain mols. themselves; it is the mols. which must be conceived as individual crystallites. The well-known effects of the conditions of heating and of deformation on the temp. of softening of polystyrene are interpreted as relaxation effects affecting the temp. of fusion of the chain mols. A "segment" of polystyrene (cf. preceding abstr.) consists of only 5–6 monomer links. This indicates high flexibility of the mols. of polystyrene, comparable to that of rubber hydrocarbons. The hypothesis of a crystn. of polystyrene mols. may account for the simultaneous presence of high flexibility and a high t_g, if one ascribes the solidification not to vitrification, but to a freezing of the mols. N. Thon

C. A.

3,

Influence of the volume concentration of plastifier on the vitrification temperature of the plastic. V. A. Kargin and Yu. M. Malinskii. *Doklady Akad. Nauk S.S.S.R.* 73, 987–70(1950).—Vitrification temps. t_c of polychlorovinyl (mol. wt. 72,000), as a function of the amt. of plastifier incorporated, all lie on the same straight line for a series of different plastifiers (tributyrin, diethyl sebacate, dioctyl sebacate, dimethyl phthalate, dioctyl phthalate, cyclohexanone, chlorobenzene, heptyl heptylate) if the amt. of plastifier is expressed in vol. fractions φ; the lowering of t_c for all the plastifiers enumerated, is a linear function $\Delta t_c = 193\ \varphi$. Analogously, for polystyrene (mol. wt. 638,000), (plastifiers hexachloroethane, chlorobenzene, ethylbenzene, dimethylphthalate, dioctyl phthalate, *sec*-butylbenzene, methyl hexyl ketone, cetyl chloride), $\Delta t_c = 275\ \varphi$, holding up to about $\varphi = 0.35$; deviations, in the direction of the exptl. t_c lying above the straight line, appearing at higher φ, especially with the phthalates, are attributed to their relatively high t_c. If the concn. of the plastifier is expressed in mol. σ_c, the curves for the different plastifiers do not coincide. The linear relation between t_c and the vol. fraction of the plastifier, regardless of its nature, is proof that microviscosity in high polymers is detd. by the geometric factor of the mean distance between the macromols. N. Thon

MALINSKIY, Yu. M.; KHOMIKOVSKIY, P.M.

Properties and structure of low-temperature rubbers. Vsesoyuz. Khim. Obshchestvo im. D.I. Mendeleyeva, Vysokomolekul. Soedineniya No.11, 17-25 '51.
(CA 47 no.14:7247 '53)

KARGIN, V.A.; MALINSKIY, Yu.M.

The influence of plasticizers on the hardening temperature of polystyrene and polyvinyl chloride. Khim. i Fiz.-Khim. Vysokomolekul. Soyedineniy. Doklady 7-oy Konf. Vysokomolekul. Soyedineniyam '52, 255-64. (MLRA 5:7)
(CA 47 no.22:12878 '53)

MALINSKIY, YU. M.: KHOMIKOVSKIY, P.M.

Rubber

Properties and structure of low temperature rubbers., Vysokomolek. soed., no. 11, 19[illegible].

Monthly List of Russian Accessions, Library of Congress, March 1952. Unclassified.

BERLIN, A.A.; MALINSKIY, Yu.M., redaktor; POGUDKIN, P.V., tekhnicheskiy redaktor

[Principles of producing gas-filled plastics and elastomers] Osnovy proizvodstva gazonapolnennykh plastmass i elastomerov. Moskva, Gos. nauchno-tekhn. izd-vo khim. lit-ry, 1954. 189 p. [Microfilm] (MLRA 8:3)
(Plastics) (Rubber, Synthetic)

MALINSKIY, Yu. M.

USSR/Physical Chemistry

Card 1/1

Authors : Kargin, V. A. Academician; Malinskiy, Yu. M., and Medvedev, S. S. Memb. corresp. of the Acad. of Sc. USSR.

Title : Investigation of monomolecular polyacrylate films

Periodical : Dokl. AN SSSR, 96, Ed. 2. 307 - 309, May 1954

Abstract : The chain molecules of polyacrylates (as well as many other high polymers) are oriented flatwise over an aqueous surface, whereby the carbonyl atoms of oxygen are the "anchors" binding the macromolecule with the surface of the water and the side paraffinic chains "project" into the air. A solid mono-layer of the polycetylacrylate has a greater thickness than a mono-layer of polymethylacrylate and a smaller specific area. During compression of the solid mono-layer takes place the ejection of individual chain links. Three references; 2 USSR, Table.

Institution : .....

Submitted : March 18, 1954

MALINSKIY, Yu.N.; KARGIN, V.A.

Thermomechanical measurements. Koll.zhur.18 no.3:372 My-Je '56.
(Strength of materials) (MIRA 9:9)

MALINSKIY, Yu.M.; SLONIMSKIY, G.L.

Universal deformeter. Zav.lab. 22 no.10:1247-1249 '56.
(MLRA 10:5)

1.Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni L.Ya. Karpova.

(Testing machines)

Category : USSR/Atomic and Molecular Physics - Physics of High-Molecular Substances D-9

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3633

Author : Malinskiy, Yu.M.
Inst : Physicochemical Institute, imeni L.Ya. Karpov, Moscow
Title : On the Effect of Small Amounts of One of the Components on the Mechanical Properties of a Copolymer.

Orig Pub : Zh. fiz. khimii, 1956, 30, No 4, 934-936

Abstract : A study was made of the dependence of the deformation on the time at constant force and temperature, and of the dependence of the deformation of the temperature at constant force and time, for copolymers of styrol with metacryllic acid and acryllonitrol at contents up to 10 mol.%. It is shown that introducing a small number of polar links into the macromolecule of polystyrol raises the vitrification temperature only slightly, but retards strongly the speed of development of the high-elastic deformation. The data obtained are attributed to the formation of knots resulting the polar groups, without changing the flexibility of the portion of the molecule between the knots, but making the displacement of large sections of molecules difficult.

Card : 1/1

MALINSKIY, Yu.M.

The ninth conference on macromolecular compounds. Koll.zhur. 19 no.4:524-527 Jl-Ag '57. (MIRA 10:10)
(Moscow--Macromolecular compounds--Conferences)

BUGAYENKO, L.T.; NIKITINA, T.S.; PRAVEDNIKOV, A.N.; MALINSKIY, Yu.M.

[Chemical action of ionizing radiation] Khimicheskoe deistvie ioniziruiushchikh izluchenii. Moskva, 1958. 84 p. (MIRA 12:4)
(Radiochemistry)

21(8) PHASE I BOOK EXPLOITATION SOV/2326

Bugayenko, L. T., T.S. Nikitina, A. N. Pravednikov, and Yu M. Malinskiy

Khimicheskoye deystviye ioniziruyushchikh izlucheniy (Chemical Action of Ionizing Radiation) Moscow, 1958. 84 p. (Series: Khimicheskaya promyshlennost') Errata slip inserted. 1,500 copies printed.

Sponsoring Agencies: USSR. Gosudarstvennyy nauchno-tekhnicheskiy komitet, and Akademiya nauk SSSR. Vsesoyuznyy institut nauchnoy i tekhnicheskoy informatsii. No contributors mentioned.

PURPOSE: The book is intended for chemists and chemical engineers.

COVERAGE: The book discusses the effect of ionizing radiation on various chemical processes. The effect of radiation on inorganic and organic compounds, on polymerization in the liquid, gaseous and solid phases, and on the properties of polymers is adequately covered. No personalities are mentioned. There are 495 references: 67 Soviet, 343 English, 16 German, 66 French, and 3 Italian.

Card 1/3

TABLE OF CONTENTS:

SOV/2326

AVAILABLE: Library of Congress

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9-9-59

Card 3/3

FREYDIN, A.S.; MALINSKIY, Yu.M.; KARPOV, V.L.

Effect of ionizing radiation on natural polymers. Carbohydrate-lignin complex and its components. Vysokom.soed. 1 no.5:784-790 M '59. (MIRA 12:10)

1. TSentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy Akademii stroitel'stva i arkhitektury SSSR i Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Gamma rays) (Lignin)

06210
SOV/64-59-6-2/28

25(5)

AUTHORS: Karpov, V. L., Malinskiy, Yu. M., Mitrofanova, L. V., Sinitsyn, S. T., Finkel', E. E., Fridman, A. S., Cherntsov, S. M.

TITLE: Increase in the Thermostability of the Polyethylene Insulation of Cables by Means of Exposure to Ionizing Radiation

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 6, pp 468 - 474 (USSR)

ABSTRACT: The thermostability of polyethylene can be increased by the action of ionizing radiations (Ref 1). Polyethylene exposed to a sufficiently large dose of radiation at 110-115° possesses properties similar to those of rubber (Ref 3). An investigation was made of the irradiation conditions and testing methods of cables (1 mm thick copper wire) insulated with polyethylene (type OKhK-501). The insulating material was exposed to γ-rays of Co^{60} (gamma plant "K-20000" (Ref 8)) with a capacity of 0.6-0.9 Mrad/h or to fast electrons from a linear accelerator of 1 Mev. The tensile strength of the exposed samples was tested by means of a dynamometer designed by V. A. Belynskiy, S. D. Prokudin, and B. I. Zverev at the Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov). The thermostability of the irradiated samples was determined by means of an apparatus (Ref 10). At the same time, the dependence of the deformation on time was investigated at

Card 1/2

a definite load and a constant rate of temperature increase (50°C/h). The thermodynamic curves obtained (Figs 2-10), the tensile-strength coefficients (Table 1), and the data of electric resistance (Table) as well as data concerning the thermal aging of the irradiated samples permit the following statements: an irradiation of either of the two above-mentioned kinds permits an increase in the temperatures to which polyethylene insulations may be exposed. The optimum mechanical properties of the insulation were reached in the case of γ-irradiation in a vacuum with doses up to 100-150 Mrad and in the case of electrons in air during 2-4 minutes at a tension of 1 mgv or during 8 minutes at 0.6 mgv and a current density of approximately 15 $\mu a/cm^2$. The cables irradiated with the optimum dose operate without failure for some hours at temperatures up to 230-250°, some ten hours at 130°, and several hundred hours at 110°. The use of corresponding stabilizers may essentially lengthen the life of irradiated polyethylene insulation and increase the maximum working temperature. There are 10 figures, 3 tables, and 11 references, 7 of which are Soviet.

FREYDIN, A.S.; MALINSKIY, Yu.M.; KARPOV, V.L.

Effect of ionizing radiation on the chemical stability of wood. Gidroliz i lesokhim.prom. 12 no.4:4-7 '59. (MIRA 12:8)

1. TSentral'nyy nauchno-issledovatel'skiy institut mekhanicheskoy obrabotki dereva (for Freydin). 2. Fiziko-khimicheskiy institut im. L.Ya. Karpova (for Malinskiy, Karpov).
(Wood--Chemistry) (Radiation)

15.5560

S/183/60/000/03/03/007
B020/B054

AUTHORS: Nechayeva, S. A., Malinskiy, Yu. M., [illegible], G. A.

TITLE: Investigation of the Possibility of Increasing Thermal Stability of Polyolefin Fibers by the Action of Ionizing Radiation

PERIODICAL: Khimicheskiye volokna, 1960, No. 3, pp. 7-9

TEXT: It is known that the polyolefin fibers hitherto used in the industry have a low thermal stability. These fibers and the products made of them have the following disadvantages: a) Irreversible shrinking at increased temperatures, and b) considerable decrease in strength with increase in temperature. To increase the thermal stability of polymeric materials, mainly fibers, various methods have been used; one of the most efficient methods is the formation of chemical bonds between the macromolecules of the polymer which is, however, rendered difficult by the fact that these polymers do not contain reactive functional groups by which a reticulation could occur. It was the object of the investigation under review, the results of which are briefly outlined,

Card 1/3

Investigation of the Possibility of Increasing Thermal Stability of Polyolefin Fibers by the Action of Ionizing Radiation

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to study the possibility of an increase in thermal stability of polyolefin fibers by radioactive radiation; the behavior of polypropylene- and polyethylene fibers obtained by shaping in a thermoplastic state was studied by a method described previously (Ref. 1). The shaped and additionally drawn fiber was irradiated in the vacuum with γ-rays of Co^{60} in a device described in Ref. 3 (K = 20000) with a dosage of 0.7-0.8 Mrad/h. The increase in thermal stability of the fiber after irradiation was mainly determined by the change in shrinking at different temperatures between 50 and 100°. Besides, the authors investigated the change in strength and elongation at increased temperatures of not irradiated fibers and of polyethylene fibers irradiated with different doses of γ-rays. Figs. 1 and 2 illustrate data on the change in the shrinking degree of polypropylene fibers irradiated with different doses of γ-rays, at increased temperatures. Polypropylene with a content in amorphous phase of 10% and a yarn number of 730 was used in the irradiation. Table 1 lists data on the influence of the radiation dose on the change in mechanical properties of polypropylene fiber.

Card 2/3

Investigation of the Possibility of Increasing Thermal Stability of Polyolefin Fibers by the Action of Ionizing Radiation

S/183/60/000/03/03/007
B020/B054

Figs. 3 and 4 show the curves of the change in tearing strength and breaking dilation of irradiated and not irradiated polyethylene fibers at increased temperatures. The results obtained show that the shrinking of polypropylene fiber at increased temperatures is considerably reduced by irradiation with a simultaneous considerable deterioration of the mechanical properties. In the polyethylene fiber, an irradiation under the conditions mentioned reduces the flowing of the fiber at increased temperatures but cannot reduce the losses of strength at such temperatures. This publication is the 15th of the series "Investigations in the Field of Production of New Types of Synthetic Fibers". There are 4 figures, 1 table, and 4 references: 3 Soviet and 1 British.

ASSOCIATION: MTI (Moscow Textile Institute)

Card 3/3

FREYDIN, A.S.; MALINSKIY, Yu.M.

Effect of ionizing radiations on polysaccharides. Usp. khim. 1 tekh. polim. no.3:130-159 '60. (MIRA 13:9)
(Polysaccharides) (Radiation)

S/629/60/000/003/008/01[illegible]
D202/D305

AUTHORS: Freydin, A. S., and Malinskiy, Yu. M.

TITLE: The effects of ionizing radiation on polysaccharides

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo imeni D. I. Mendeleyeva. Uspekhi khimii i tekhnologii polimerov, sb.3. Moscow, Goskhimizdat, 1960, 130-159

TEXT: A summary of experimental results of the irradiation of mono- and polysaccharides with high-speed electrons, X- and γ-rays and neutrons, published both by Western and Soviet investigators. The authors describe many experiments in detail, illustrating them by tables, figures and reaction mechanisms taken from the original, mostly Western publications. The summary is divided into three parts: 1) The action of radiation on simple saccharides - glucose, fructose, lactose, sucrose and raffinose, 2) the action of radiation on polysaccharides (except cellulose) - agar, insulin, gum arabic, starch, amylose, pectin, amylopectin, dextran, alginic acid and some mucosaccharides, 3) the effects of irradiating

Card 1/2

The effects of ionizing ...

S/629/60/000/003/008/0[illegible]
D202/D305

cellulose and its derivatives - wood and cotton cellulose, nitro-, aceto- and ethyl cellulose and cellophane. There are 15 figures, 10 tables and 92 references: 21 Soviet-bloc and 71 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: G. Phillips and G. Moody, Appl. Rad. isotopes, 6, 78, October (1959); D. Kennaga and E. Cowling, For. Res. J. 9, 3, 112, (1959); W. Newell and H. Rutherford, 3-d industr. nuclear technol. confer., Chicago, (1958); K. Ninnemann, Nucl. Sci. Abstr. 13, 766, (1959).

Card 2/2

TIKHOMIROVA, N.S.; MALINSKIY, Yu.M.; KARPOV, V.L.

Diffusion processes in polymers. Part 1: Diffusion of monatomic gases through polymer films of different structure. Vysokom. soed. 2 no.2:221-229 F '60. (MIRA 13:11)

1. Nauchno-issledovatel'skiy institut plasticheskikh mass i Fiziko-khimicheskiy institut imeni L.Ya. Karpova.
(Polymers) (Diffusion)

TIKHOMIROVA, N.S.; MALINSKIY, Yu.M.; KARPOV, V.L.

Diffusion processes in polymers. Part 2: Effect of the atomic diameter on the diffusion of gases in the polymer. Vysokom. soed. 2 no.2:230-237 F '60. (MIRA 13:11)

1. Nauchno-issledovatel'skiy institut plastmass i Fiziko-khimicheskiy institut imeni L.Ya. Karpova.
(Diffusion) (Polyethylene) (Polyamides)

83702

S/190/60/002/006/007/012
B015/B064

11.2210

AUTHORS: Yegorova, Z. S., Malinskiy, Yu. M., Karpov, V. L., Kalmanson, A. E., Blyumenfel'd, L. A.

TITLE: Chemical Changes of Polyvinylchloride Under the Influence of Ionizing Radiations

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 6, pp. 891-898

TEXT: The present paper investigates the dependence with time of the color change of PVC irradiated or non-irradiated under different conditions. The structural changes brought about by irradiation were also investigated. PVC powder samples and films (40, 180, and 200 μ thick) were irradiated at 293°K and 77°K in vacuum (approximately 10^{-4} torr). and stored in vacuum or in the air. Irradiation was made with fast neutrons with an energy of 200 kev, with a current density of 0.6 μ a/cm^2 being applied to the samples provided for determining the absorption spectra (on the СФ-4 (SF-4) spectrometer) and paramagnetic electron resonance, and for determining the infrared spectra 1.2 μ a/cm^2. An

Card 1/3

83702

Chemical Changes of Polyvinylchloride Under the Influence of Ionizing Radiations

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B015/B064

electron accelerator with extracted beam was used as electron source. L. A. Vasil'yev irradiated the samples. In the infrared spectrum of the non-irradiated PVC (Fig. 1) a strong absorption band lies at 1256 cm^{-1} for the -CHCl- group (Ref. 8), at 1428 cm^{-1} for the deformation oscillations of the methylene group (Ref. 9), and at 1330 cm^{-1} for the CH group (Ref. 9), at 1097 cm^{-1} for the C-C bond of the carbon chain, at 960 cm^{-1} for the methylene group and the C-C bond of the carbon skeleton, as well as at 698 cm^{-1} for the C-Cl bond. The intensity of the 1256 cm^{-1} and 698 cm^{-1} band is reduced in the spectrum of PVC irradiated in vacuum at room temperature for 3 hours which indicates a reduction of the chlorine content, as well as of the 1428 cm^{-1} and 960 cm^{-1} indicating a reduction in the amount of methylene groups. In this connection conjugate double bonds are formed under the separation of HCl (new band in the range of 1720-1530 cm^{-1}) The further results obtained by spectral analyses and paramagnetic electron resonance indicate that the color change of PVC is due to processes occurring under the partici pation of radicals. By the method of the paramagnetic electron resonance the concentration of the radicals was found to decrease with time. In vacuum, this decrease is apparently due to a recombination of the radicals,

Card 2/3

83702

Chemical Changes of Polyvinylchloride Under the Influence of Ionizing Radiations

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B015/B064

and in the presence of air oxygen to a reaction of the latter with the free radicals under the formation of peroxide radicals. The vanishing of the free radicals is accelerated on heating, with chromophores (very likely with polyene character) being formed, intensivating the color of PVC. The infrared spectra were recorded with a device of the firm Khil'ger, model 209. There are 7 figures and 11 references: 5 Soviet, 5 US, and 1 French.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpo (Physico-chemical Institute imeni L. Ya. Karpov). Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics of the AS USSR)

SUBMITTED: February 22, 1960

Card 3/3

83475

21.6200 also 2209, 2109

S/190/60/002/009/006/019
B004/B060

AUTHORS: Tikhomirova, N. S., Malinskiy, Yu. M., Karpov, V. L.

TITLE: Study of Diffusion Processes in Some Polymers. III. Irreversible Variations of the Diffusion Characteristics Due to the Action of Gamma Radiation of Co^{60} on the Polymer

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 9, pp. 1335-1348

TEXT: The authors studied the dependence of the coefficient P of the permeability to gas, of the diffusion coefficient D, and of the solubility S of helium and argon on the irradiation dose (up to 1250 Mrad) at 25, 40, 60, and 70°C for films of polyethylene (0.4 mm), polyamide 54/10 (0.01 mm), methylol polyamide 2/10 (0.012 mm), CKC-30 (SKS-30) rubber (0.4 mm), and polytetrafluoro ethylene (0.06 mm). Apparatus, preparation of the films, and method of measurement are described in a previous paper (Ref. 19). Experimental data are provided as follows: 1) For polyethylene: (Figs. 1, 2, Table 1) P and D for helium and argon as a function of the irradiation dose; Fig. 3: dependence of the degree of cross-linking on the dose; Fig. 4:

Card 1/4

83475

Study of Diffusion Processes in Some Polymers. III. Irreversible Variations of the Diffusion Characteristics Due to the Action of Gamma Radiation of Co^{60} on the Polymer

S/190/60/002/009/006/019
B004/B060

relative heights of the peaks of X-ray diffraction in irradiated and non-irradiated material; Table 3: σ for He and Ar as a function of the dose; Fig. 9: log P, log D, and log σ as f(1/T) for non-irradiated material, as well as at 100 Mrad and 800 Mrad. 2) Polyamide and methylol polyamide: Table 2, Fig. 5: P and D as a function of the dose at 25 and 95°C; Figs. 6, 7: relative heights of the peaks of X-ray diffraction; Fig. 10: log P and log D as a function of 1/T for non-irradiated material, as well as at doses of 600 and 1250 Mrad. 3) Polytetrafluoro ethylene: Fig. 8: P, D, and σ as a function of the dose. Table 4 gives the activation energies E_D of diffusion, E_p of permeability, and the values for D_o - defined as log $D_o = f(E_D)$ (Fig. 11), as well as the enthalpy and entropy of the dissolution of gases in the polymers investigated with varying dose. Table 5 provides the solution heats of ethane, ethylene, propane, and butane in vulcanized natural rubber as a function of the sulfur content. Basing on these data, the authors arrived at the following conclusions: With increasing irradiation dose there is a decrease in the diffusibility of gases in polyethylene.

Card 2/4

03475

Study of Diffusion Processes in Some Polymers. III. Irreversible Variations of the Diffusion Characteristics Due to the Action of Gamma Radiation of Co^{60} on the Polymer

S/190/60/002/009/006/019
B004/B060

polyamides, and SKS-30 due to increasing cross-linking. In the case of polytetrafluoro ethylene, D begins to rise at 2 Mrad. At 8 Mrad, the permeability to Ar is 27 times greater than in the case of non-irradiated material; this fact is explained by the formation of microcracks. In the case of polyvinyl chloride, the permeability to Ar is quadrupled, and that to He is trebled, after 250 Mrad. In conformity with Ref. 26, the authors assume a cleavage of HCl, formation of double bonds, and a resulting greater solubility of gases, as well as the formation of microdefects. E_D, heat and entropy of the dissolution of gases increase with polyamides and drop with polyethylene. The drop of E_p is due to the drop of the dissolution enthalpy with increasing dose. Up to a cross-linking of 10-12%, the steepest drop of P and D occurs in polyethylene. D_o is a particularly sensitive characteristic of the structural changes undergone by a polymer under irradiation. The following after-effects were observed: With polyethylene and polyamides, heating leads to a further decrease of P and D;

Card 3/4

83475

Study of Diffusion Processes in Some Polymers. III. Irreversible Variations of the Diffusion Characteristics Due to the Action of Gamma Radiation of Co^{60} on the Polymer

S/190/60/002/009/006/019
B004/B060

with polytetrafluoro ethylene, this effect occurs already at room temperature. These effects, which are explained by the reaction of free radicals, were taken into account during the measurements. The authors thank B. I. Zverev for his determination of the crystal content of irradiated polymers by means of X-ray diffraction. There are 11 figures, 5 tables, and 29 references: 11 Soviet, 12 US, and 6 British.

ASSOCIATION: Nauchno-issledovatel'skiy institut plastmass (Scientific Research Institute of Plastics). Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: March 31, 1960

Card 4/4

21.6200 also 2209, 2109

83476

S/190/60/002/009/007/019
B004/B060

AUTHORS: Tikhomirova, N. S., Malinskiy, Yu. M., Karpov, V. L.

TITLE: Study of Diffusion Processes in Some Polymers. IV. Reversible Variations of the Diffusion Characteristics Under the Action of Irradiation

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 9, pp. 1349-1359

TEXT: In the present article, the authors discuss their studies dealing with the changes in diffusivity of gases through polymer films under the action of irradiation, and explain the reason why the direct measurement of the diffusion constant D gives rise to experimental difficulties, so as to make it preferable to measure the permeability constant P as a function of the time or irradiation τ (Fig. 1). Fig. 2 is a schematic representation of the experimental apparatus. A polyethylene or polytetrafluoro ethylene film was stretched across the diffusion cell made of stainless steel (Fig. 3). The space below the film was filled with helium or xenon (700 torr); the space above the film was evacuated to

Card 1/3

Study of Diffusion Processes in Some Polymers. IV. Reversible Variations of the Diffusion Characteristics Under the Action of Irradiation

$2 - 5 \cdot 10^{-3}$ torr. The pressure change in vacuum was measured by an induction manometer designed by V. B. Osipov (Fig. 4), the sensitivity of which was 0.05 torr per dial millimeter. The inductivity was recorded with an ЭПВИ-14 (EPVI-14) apparatus. Fig. 5 shows the calibration curve of the manometer. The diffusion cell was irradiated by means of Co^{60} in a К-20000 (K-20000) chamber. The diffusion cell was repeatedly introduced into the irradiation chamber and taken out again. Figs. 6-8 show the function $\Delta p = f(\tau)$ for helium - polyethylene, xenon - polyethylene, and helium - polytetrafluoro ethylene at radiation intensities attaining 730 roentgen/sec. Table 1 gives the effect of various radiation intensities on P. The following was observed: P rises at beginning irradiation and nearly drops back to the original value P_o when irradiation is stopped. In the case of polyethylene, P rises to the 10 - 15fold, and doubles in the case of polytetrafluoro ethylene. Xenon is diffused more quickly than helium. Fig. 9 shows that P/P_o is a linear function of the radiation intensity. Table 2 shows the effect of the temperature increase of the film on the permeability to gas. It may be seen that the latter was responsible

83476

Study of Diffusion Processes in Some Polymers. IV. Reversible Variations of the Diffusion Characteristics Under the Action of Irradiation

S/190/60/002/009/007/019
B004/B060

for only 1/6 of the measured effect. Specific experiments made with an even more sensitive manometer (0.013 torr per dial millimeter, calibration curve Fig. 10) showed that the higher permeability to gas is not caused by an increased solubility of gases in the polymer irradiated (Table 3). A paper by Yu. S. Lazurkin et al. is mentioned (Ref. 1). There are 10 figures, 3 tables, and 4 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut plastmass (Scientific Research Institute of Plastics). Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: March 31, 1960

Card 3/3

S/032/60/026/01/034/052
B010/B006

28 (5)

AUTHORS: Karpov, V. L., Malinskiy, Yu. M., Mitrofanova, L. V., Finkel', E. E., Fridman, A. S.

TITLE: Device for Determination of the Thermal Stability of Polyethylene- or Rubber Cable Insulations

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 26, Nr 1, pp 102 - 103 (USSR)

ABSTRACT: The device mentioned in the title (Fig 1) consists essentially of an H-shaped frame standing on a steel plate. The latter has an opening in the middle of the crossbeam, through which the post with the loading weights is guided. At its top end, the post is fitted with a plate which transmits the pressure to the sample by means of two inset rodlets. The sample (a piece of cable with the insulation to be tested) is supported by two rodlets also. To indicate subsidence (sample deformation) of the last-mentioned plate by the indicator, the indicator is placed on the plate. Except for the indicator, the device is put in a thermostat, rendering possible sample heating at various rates up to 230°. The thermomechanical curves obtained for samples of high- and low-pressure polyethylene by means of the device described above

Card 1/2

Device for Determination of the Thermal Stability of Polyethylene- or Rubber Cable Insulations

S/032/60/026/01/034/052
B010/B006

are given (Fig 2). The relative measuring error of this device is ± 5% at the maximum. There are 2 figures.

Card 2/2

KORCHEMKIN, F.I.; MALINSKIY, Yu.M.; SUKHOV, G.V.

Effect of ionizing radiations on the fibers of wood cellulose. Trudy LTA no.91:101-104 '60. (MIRA 15:12)

1. TSentral'noy nauchno-issledovatel'skiy lesokhimicheskiy institut i Fiziko-khimicheskiy institut imeni Karpova.
(Cellulose)
(Materials, Effect of radiation on)

5(4),21(8),15(8)

AUTHORS: Tikhomirova, N.S., Malinskiy, Yu.M., Karpov, V.L.

S/020/60/130/05/035/061
B004/B014

TITLE: Reversible Alterations of the Permeability of Polymers to Gases in the Gamma Irradiation Process

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 1081-1084 (USSR)

ABSTRACT: As M.A. Makul'skiy and Yu.S. Lazurkin (Ref 5) had observed reversible effects in the irradiation of polymers, the authors investigated the effect of γ-radiation upon gas diffusion by polymers. Films of polyethylene and polytetrafluoroethylene were irradiated with Co^{60} (activity of 20 kg-equiv. of radium) with doses of up to 700 rads/sec. The rate of helium- or xenon diffusion by the film was manometrically measured. The design of the pressure gauge with a recorder of the type EPVI-14 was suggested by V.B. Osipov. The experimental apparatus is illustrated in figure 1. Figure 2 shows the function $p = f(\tau)$ for polyethylene at 10^6 and a dose of 730 rads/sec. Experimental data are compiled in table 1. Immediately after the introduction of the radiation source into

Card 1/2

the apparatus, pressure rises linearly with the radiation dose. When the source has been removed, the diffusion rate changes, approaches the initial rate, but remains higher. This hangover effect increases after each irradiation. The same results were obtained for polytetrafluoroethylene (Fig 3). In this case, test periods were, however, short because of the low radiation stability of this polymer. Figure 4 shows the temperature dependence of the rate of xenon diffusion by polyethylene. The acceleration of radiation-induced diffusion is explained by local excitation of molecules, increase in their elasticity due to primary absorption events of γ-quanta, and by secondary reactions. There are 4 figures, 1 table, and 7 references, 4 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Institute of Physical Chemistry imeni L.Ya. Karpov). Institut promyshlennosti plasticheskikh mass (Institute of the Plastics Industry)

PRESENTED: July 30, 1959, by V.A. Kargin, Academician

SUBMITTED: July 14, 1959

BEMFORD, K.[Bamford, C.H.]; BARB, U.[Barb, W.G.]; DZHENKINS, A. [Jenkins, A.D.]; ON'ON, P.[Onyon, P.F.]; GRITSENKO, T.M., kand.khim. nauk, [translator]; MILYUTINSKAYA, R.I., kand. khim. nauk, [translator]; PRAVEDNIKOV, A.N., kand. khim. nauk [translator]; MALINSKIY, Yu.M., kand. khim. nauk, red.; KHODETSKAYA, Z.F., red.; PRIDANTSEVA, S.V., tekhn. red.

[Kinetics of vinyl polymerization by radical mechanisms] Kinetika radikal'noi polimerizatsii vinilovykh soedinenii. [By] C.H. Bamford i dr. Moskva, Izd-vo inostr. lit-ry, 1961. 345 p. Translated from the English. (MIRA 15:3)
(Vinyl compound polymers) (Radicals (Chemistry))

S/081/62/000/003/088/090
B159/B101

5.4600

AUTHORS: Tikhomirova, N. S., Malinskiy, Yu. M., Karpov, V. L.

TITLE: Irreversible and reversible changes of the diffusion characteristics of certain polymers as a result of the action of gamma radiation on a polymer

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 644-645, abstract 3R65 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, 1959, v. I. Tashkent, AN UzSSR, 1961, 334-339)

TEXT: The diffusion of He, Ar, and Xe through films of polyethylene (PE), polyamide-54/10 (PA), methylolpolyamide-2/10, CKC-30 (SKS-30) and polytetrafluorethylene (PTFE) after gamma irradiation is studied. The constants of diffusion (D) and permeability (PR) were determined. In the case of He after a dose of 400 Mrads at 25 and 95°C, D and PR decreased for all polymers. On increasing the irradiation dose the activation energies of D and PR increase in the case of the polyamides; in the case of PE when the irradiation dose was increased to 400 Mrads the activation

Card 1/2

Irreversible and reversible ...

energies decreased and then remained practically constant. In all cases an aftereffect was observed. It was established that PR sharply increases at the initial moment of irradiation. PR assumes its initial value on removal of the source. The acceleration of PR grows as the dose rate is increased. It is assumed that the increase of PR is due to an increase in solubility of He, Ar, and Xe, or by an acceleration of D, or by both factors simultaneously. [Abstracter's note: Complete translation.]

Card 2/2

15 8520

9.2165 (1001, 1331, 1482)

33124

S/638/61/001/000/055/056
B125/B104

AUTHORS: Karpov, V. L., Malinskiy, Yu. M., Mitrofanova, L. V., Slinitsyn, S. T., Finkel', E. E., Fridman, A. S. Chernetsov, S. M.

TITLE: Increase of the thermal stability of polyethylen-insulated lines by ionizing radiation

SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy, v. 1 Tashkent, 1961, 383-389

TEXT: A copper wire 1 mm in diameter and insulated with 0.5 mm of polyethylene was irradiated by a Co^{60} gamma radiation source of 20,000 g-equ. Ra in a vacuum as well as by an electron linear accelerator in the air. The thermal stability of the irradiated samples was determined by the analysis of the thermomechanical curves, i.e., of the time dependence of deformation under given load and with the temperature rising by a constant rate of 50 deg/hr, using a specially built device. The deformation that was attained is a measure of thermal stability at given temperature and load. The lifetime of the workpiece can be estimated from

Card 1/4

Increase of the thermal stability ...

the time dependence of deformation (likewise measurable by the above-mentioned device) at constant temperature and load. At increased temperatures the deformation is the lower, the higher the radiation dose, and remains practically constant up to 250°C. The restriction of deformation under a load of 0.5 kg to about half the radial thickness by irradiation with doses of 100-150 Mrad or by irradiation with 1-Mev (15 $\mu a/cm^2$) electrons for 2-4 min guarantees the usability of lines above 80°C. The final deformation is increased by a load increase without any change of its nature. The line still remains efficient if the load is quadrupled. The amount of final deformation is not affected by the rate of temperature increase over a wide range. The deformation is only little temperature-dependent under both long and brief load action. A line with irradiated insulation can be exposed to 180°C for at least 4 hrs, and remains efficient for some hours even at 230-250°C. If suitable stabilizers are introduced into polyethylene, the maximum operating time in this temperature range can probably be increased considerably, and the line can be exposed to even higher temperatures for a short time. The increased thermal stability improves the reliability of insulated wires at high temperatures, especially in the case of breakdown, and increases

Card 2/4

the operating time at normal temperatures. Gamma irradiation in vacuo increases the stability at 20° and 90°C, while doses of more than 200 Mrad reduce it. The irradiation of 0.4 mm thick samples in the air reduces the relative elongation and also the tensile strength at 20° and 90°. The best strength properties are achieved by irradiation in vacuo with doses of up to 100 Mrad. The tensile strength of an insulation irradiated with fast electrons are presented in Table 1. Tensile strength, resistance to frost, electric breakdown and electrical resistance of a sample irradiated with a gamma dose of 100 Mrad or, equivalently, with 1-Mv electrons for 2-4 min were fully satisfactory. The resistance of line insulation to thermal aging drops with increasing radiation dose. Samples irradiated with electrons are more resistant in this respect than samples irradiated with an equivalent gamma dose. There are 6 figures, 6 tables, and 7 references: 5 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: Dolle M., Kelling C. D., Rose D. J. J. Am. Chem. Soc., 76, 4304, 1954; Charlesby A., Bain, T. Brit. Plastics, 30, 4, 146, 1957.

Card 3/4

Increase of the thermal stability ...

33124
S/638/61/001/000/055/056
B125/B104

ASSOCIATION: Gosudarstvennyy n.-i. institut kabel'noy promyshlennosti (State Scientific Research Institute of Cable Industry). N.-i. fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Physicochemical Research Institute imeni L. Ya. Karpov). Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute imeni V. I. Lenin)

Table 1. Tensile strengths of insulations irradiated with fast electrodes.
Legend: (1) irradiation technique; (2) nonirradiated material; (3) voltage; (4) exposure (min); (5) tensile strength, kg/cm^2; (6) relative elongation, %.

(1) Режим облучения	(2) Необлученный материал	Напряжение (3) 0,6 Мв					1 Мв			
		экспозиция, мин. (4)								
		1	2	4	8	16	0,5	1	2	4
(5) Сопротивление разрыву, кг/см²	160	148	134	131	158	154	166	159	143	131
(6) Относительное удлинение, %	480	452	221	144	106	38	461	357	266	165

Card 4/4

...ina, Iu.L.; MALINSKIY, Yu.M.; YAKUBOVICH, S.V.; Prinimali uchastiye: LARINA, A.N.; ZEVINZON, I.I.

Investigating the processes of aging of lacquer and paint coatings. Report No.1. Investigation of the aging process of alkyd and alkyd-melamine coatings. Lakokras. mat. i ikh prim. no.6:31-35 '61. (MIRA 15:3)

(Protective coatings)

S/081/62/000/008/055/057
B158/B101

AUTHORS: Blokh, G. A., Karpov, V. L., Malinskiy, Yu. M., Ol'shanskiy, L. P., Khlopplyankina, M. S.

TITLE: The action of ionizing radiation on cable rubbers

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 8, 1962, 602, abstract 8P357 (Vestn. elektroprom-sti, no. 8, 1961, 52-56)

TEXT: The effect of direct ionizing radiation on different cable structures was studied as well as on insulating and hose rubbers subjected to irradiation in air, in vacuum, in water and at high temperatures. The insulating and hose rubber was irradiated separately and in replicate with Co^{60} over a wide range of doses up to 500 Mrad, intensity 0.3 Mrad/hr. Ionizing radiation causes deterioration in the physico-mechanical and dielectric properties of the cable rubbers. With increase in the radiation dose >50 Mrad, an abrupt fall in the specific elongation and an increase in hardness were observed. The rubbers maintain satisfactory durability, do not possess elasticity. In regard to a number of indices

Card 1/2

S/081/62/000/008/055/057
B158/B101

The action of ionizing radiation ...

the electrical insulating properties of all the rubbers (starting from 50 Mrad) do not comply with the requirements of TOCT (GOST). Up to 50-100 Mrad irradiation in water or in vacuum, changes in the properties of the rubbers are considerably smaller. Rubbers from natural rubber or CKB (SKB) are more stable to the simultaneous action of heating and irradiation than those from nairit. [Abstracter's note: Complete translation.]

Card 2/2

S/844/62/000/000/099/129
D234/D307

AUTHORS: Blokh, G. A., Karpov, V. L., Malinskiy, Yu. M., Ol'shanskiy, L. P. and Khloplyankina, M. S.

TITLE: The effect of ionizing radiations on cable rubbers and structures

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 581-588

TEXT: Specimens were irradiated by a Co^{60} source. Up to a dose of 50 megarad the properties of rubbers changed relatively little. At higher doses, relative elongation decreases to less than a third and strength diminishes. Above 100 megarad complete destruction of rubberized fabric in cables is observed. In insulating rubbers strength decreases considerably, especially with 200 megarad. An increase of the dose to 350 megarad increases the strength again. In hose rubber ШН-40 (ShN-40) strength drops by 25 - 30% with 50 - 100 megarad, but between 100 and 300 megarad it became higher than

Card 1/2

The effectio of ionizing ...

initial strength. Hardness increased with the dose. Relative elongation was below [illegible] (GOST) standards for doses higher than 50 megarad. Properties of rubbers placed in water or in vacuum (with 50 - 100 megarad) change much less than those of rubbers placed in air, which indicates the participation of oxygen in the processes caused by irradiation. Insulation rubber TC-35 (TS-35) was more stable than hose rubber ShN-40 when subjected simultaneously to 70°C and 0.7 megarad/hour during 70 hours. Electrical insulating properties of all rubbers were below GOST standards beginning with 50 megarad. There are 3 figures and 3 tables.

ASSOCIATION: Dnepropetrovskiy khimiko-tekhnologicheskiy institut im. F. E. Dzershinzkogo (Dnepropetrovsk Institute of Chemical Technologiy im. F. E. Dzerzhinskiy), Fiziko-khimicheskiy institut im. L. Ya. Karpova, Zavod "Azovkabel"(Physico-Chemical Institute im. L. Ya. Karpov, "Azovkabel" Factory)

S/191/62/000/004/002/017
B110/B138

15.8050

AUTHORS: Bubis, L. D., Karpov, V. L., Malinskiy, Yu. M., Yanovskiy, D. M.

TITLE: Polymerization of vinyl chloride under the action of γ-rays

PERIODICAL: Plasticheskiye massy, no. 4, 1962, 3-6

TEXT: Industrial PVC with 0.5 % impurities (vinylidene chloride, chloro ethyl, methanol, acetylene, β-chloro propylene, methyl acetylene) was polymerized by means of γ-rays (Co^{60}, 18,000 g-equiv Ra). The kinetics showed it to be a case of radical polymerization. There was a long induction period at -78, -20, 0, and 20°C and P = 15 rad/sec, due to removal of primary radicals which reacted with the impurities. The total activation energy was 4.7 kcal/mole calculated from the temperature dependence of rate of polymerization between 10 and 20 % conversion with constant radiation dose. This is quite close to the figures obtained for the radiation polymerization of methyl methacrylate (5.15 kcal/mole) and styrene (6.45 kcal/mole). It is lower than with initiated polymerization since under irradiation the radical formation is independent of temperature.

S/191/62/000/004/002/017
B110/B136

The radiation dependence of the rate of polymerization is: $v = AP^k$, where A = const for a given temperature, $n = 0.96 \pm 0.07$. This indicates polymerization by the bimolecular mechanism. If the yield for 100 ev absorbed energy is calculated from the corresponding rates, $G = B/P^m$, where G = yield, B = const for a given temperature, $m = 0.47 \pm 0.04$. Thus, an increased radiation dose accelerates polymerization but reduces the efficiency of the process. At -20 and 20°C and 1-15 rad/sec, the characteristic viscosity decreases with increasing dose. This raises the initiation rate and the concentration of active centers, which causes a reduction in polymerization. Viscosity increases with a temperature drop from 20 to -20°C. A further drop, however, lowers it. The temperature coefficient of the degree of polymerization is positive. This was observed in PVC polymerization between -78 and 20°C. The temperature dependence of the characteristic viscosity was anomalous between -20 and 20°C. This is due to increased probability of the chain being broken due to transfer via monomer and impurities, which may lead to a change of the molecular weight. Characteristic viscosity and decomposition temperature increased up to ~20 % conversion, falling with further increase. The initial decrease of characteristic viscosity and thermal stability is due to impurities which

break the chain. The relative amount of impurities and their effect on the polymer properties decrease, and characteristic viscosity and decomposition temperature increase, as the degree of conversion rises. Destruction processes, formation of long-lived radicals and ramifications, occur under irradiation, which reduce characteristic viscosity and thermal stability. The color intensity increased with radiation dose owing to formation of conjugate double bonds. The polymer obtained at -20°C, $2 \cdot 10^5 - 5 \cdot 10^5$ rad had $T_v \simeq 100°C$; in radical polymerization, T_v = 75-80°C. Therefore, high-purity vinyl chloride must be used for radiation polymerization, and irradiation of the polymer should be avoided to preserve its stability. It is recommended that polymers insoluble in the monomer should be continuously withdrawn from the radiation zone. There are 9 figures. The most important English-language reference reads as follows: A. Charlesby, Atomic radiation of Polymers, N.Y., 1959.

Card 3/3

S/191/62/000/005/001/012
B110/B101

AUTHORS: Kargin, V. A., Malinskiy, Yu. M., Ratner, S. B.

TITLE: Development of the mechanics of plastics

PERIODICAL: Plasticheskiye massy, no. 5, 1962, 1-2

TEXT: An understanding of the behavior and service life of plastic products involves studying not only the purely mechanical relaxation processes but also the mechanical-chemical process of destruction, especially through repeated bulk fatigue failure or abrasion. Good mechanical properties are required for (1) use in supporting, shock absorbing, packing, etc., (2) dielectrics, (3) heat insulators, and (4) water- and gas-tight shells. In these respects, the fundamental mechanical indices must be known, such as (1) strength, (2) maximum elongation, (3) elasticity, (4) resilience, and (5) heat resistance. The mechanics of plastics must therefore be developed as an applied science able to evaluate the properties of plastics characterized as: (1) thermoreactive and thermoplastic, (2) brittle and soft, (3) monolithic and porous, (4) filled and unfilled, (5) isotropic and anisotropic. For this

Card 1/3

purpose, general mathematical theories need to be elaborated for: (1) strength, (2) elasticity, (3) plasticity, and (4) relaxation, considering the molecular, supermolecular, and macroscopic structure of different plastics. The Komissiya po mekhanike polimerov Goskhimkomiteta (Commission for Polymer Mechanics of the Goskhimkomitet) is compiling records of experimental results regarding: (1) effect of temperature and pressure on viscosity, (2) density, (3) elastic relaxation, (4) coefficient of external friction, (5) thermophysical data, and (6) effect of temperature on the yield curves. By 1963 it is hoped to have so compile the (a) elastic, (b) relaxation and (c) strength properties of all rigid plastics, for various temperatures and static and dynamic loads. Similar records are needed for the behavior of thermoreactive plastics during processing as well as for technical evaluation of foam plastics, films, soft and semirigid plastics. It is also necessary to work out uniform methods for evaluating the properties of plastics as regards workability, and to design suitable experimental apparatus. To afford reliable basis for calculating the strength and hardness of many plastic constructions, a theory of the mechanical behavior of plastics under complicated stresses should be elaborated by the Institutes of the Akademiya nauk (Academy of

Sciences) in collaboration with universities and leading scientists. The planned Nauchno-issledovatel'skiy institut po primeneniyu plastmass v mashinostroyenii (Scientific Research Institute for the Application of Plastics in Machine Building) is to supply designers with methods of calculation for complicated machine parts and constructions, and to pursue the development of research methods for plastic products. The Institutes of the AN SSSR (AS USSR), the related industry and advanced schools are to train students conversant with physico-mechanical investigation methods for polymers, in the field of the mechanics of plastics and polymers. Comprehensive studies in all fields appertaining to the mechanics of plastics are to be undertaken in the institutes of the Goskhimkomitet jointly with scientific, technical and other organizations, aiming to achieve highly effective methods of processing, rational application and extensive replacement of expensive materials.

Card 3/3

32348

S/190/62/004/001/010/020
B101/B110

54600 1304

AUTHORS: Yegorova, Z. S., ~~Malinskiy, Yu. M.~~, Karpov, V. L., Kalmanson A. E., Blyumenfel'd, L. A.

TITLE: Kinetics of disappearence of free radicals in irradiated polyvinyl chloride

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 1, 1962, 64 - 65

TEXT: The authors studied the decrease of concentration of free radicals in irradiated polyvinyl chloride in vacuo at 70 - 100°C by means of epr. Degassed polyvinyl chloride powder was irradiated with 200-kev electrons ($0.6\mu a/cm^2$) for 10 min in vacuo (about 10^{-4} mm Hg) at 77° K. The epr signal was recorded by the apparatus of A. G. Semenov, N. N. Bubnov (Pribory i tekhnika eksperimenta, 1, 92, 1959) and compared with that of the standard diphenyl picryl hydrazyl.

Card 1/3

Kinetics of disappearence of ...

Results:

Temperature, °C	70	80	90	100
$(1/T)\cdot 10^3$	2.92	2.83	2.76	2.68
$k\cdot 10^{22}$	0.06	0.28	2.76	8.04

T = absolute temperature, k = constant of the rate of disappearence of radicals (number of paramagnetic particles$^{-1}\cdot g\cdot sec^{-1}$). The function $\log k = f(1/T)$ is linear (second-order reaction). In the temperature range studied, the activation energy of recombination was 44+5 kcal/mole. There are 2 figures and 4 references: 2 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: A. A Miller J. Phys. Chem., 63, 1755, 1959; Z. Kuri, H. Ueda S. Shida J. Chem. Phys. 32, 371, 1960.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov). Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR

Kinetics of disappearance of

SUBMITTED: January 30, 1961

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Card 3/3

15.2600
15.1120

33389
S/190/62/004/002/020/021
B101/B110

AUTHORS: Malinskiy, Yu. M., Prokopenko, V. V., Kargin, V. A.

TITLE: Effect of the relaxation rate on the strength of adhesive joints

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 2, 1962, 299-303

TEXT: The authors studied the dependence of strength of the joint glass - polyvinyl acetate (PVA) - glass on the temperature and the plasticizer content of the polymer (dibutylphthalate, DBP). The specimens consisted of an oblique glass parallele-piped (Fig. 1). 20% acetonic solution of PVA was applied to the glass surface and then dried at room temperature on air for 40 min. These glass surfaces were then pressed together with a pressure of 10 kg/cm^2 at 80°C. The glue layer was 0.01 - 0.04 mm thick and had no effect on the strength. The strength was measured by loading a cylinder in the cuneiform groove (d = 1.76 mm). The results (Fig. 2) are explained by the fact, that above the vitrification temperature the polymer strength decreases, however, the relaxation rate increases. Thus the

Card 1/3

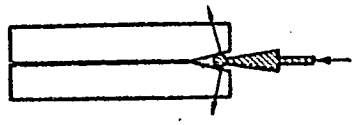
Effect of the relaxation ...

strength reaches a maximum somewhat below the vitrification temperature. With increasing plasticizer content the vitrification temperature decreases linearly. This could also be proved by thermomechanical experiments with PVA films. The extremum is characteristic of the inhomogeneous stress distribution. A. P. Aleksandrov, S. N. Zhurkov, G. M. Bartenev, V. Ye. Gul', G. A. Patrikeyev, and B. I. Panshin are mentioned. There are 5 figures and 8 references: 5 Soviet and 3 non-Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

SUBMITTED: February 16, 1961

Fig. 1: Schematical representation of specimen testing



Card 2/2

GUZEYEV, V.V.; MALINSKIY, Yu.M.

Apparatus for measuring stress relaxation of fibers. Zav.lab. 29 no.11:1373-1374 '63. (MIRA 16:12)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.

unoriented glass reinforced plastics 15

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 5, 1964, 787-790, and two inserts following p. 788

TOPIC TAGS: glass reinforced plastic, glass reinforced plastic breakup, polyester plastic binder, polyester PN 1, polyester PN 3, polyester PN 4, glass rod, glass polymer interface stress, tensile test, FMPW 250 dynamometer

ABSTRACT: Test specimens in the shape of double-bladed paddles were made of polyesters PN-1, PN-3, and PN-4, reinforced with a single or multiple longitudinal alkali-free or molybdenum-bearing glass rod 50 μ - 1 mm in diameter. The polymers were hardened for 20-24 hours at room temperature in the presence of an initiator and accelerator, and were heated for 4 hours at 80C. The specimens, with 40-mm long constricted central portions and with paddle areas of (2.5-3.0) x 8 mm, were stretched on a FMPW-250 dynamometer at the rate of 30 mm/minute. Motion picture records of the experiments were made in polarized light. The results of tests on

Card 1/3

550 specimens showed that in the single-rod reinforced plastic a gradual cracking occurred in the glass rod. The number of cracks increased with time and with the concentration of stresses near the zone of failure. It was shown by V. A. Kargin, Yu. M. Malinskiy, and A. L. Rabinovich (Dokl. AN SSSR, 157, No. 3, 1964) that during the deformation of comparatively hard reinforcing elements, bound by adhesive forces to a layer of polymer, unevenly distributed shearing stresses (τ) originated on the interphase boundary, while near the end of the element (zone β) there appeared an area of sharp concentration of stresses. These findings were confirmed by photographic records. It was also found that when the reinforcing rod was ruptured in several places, the breakdown of the plastic specimen took place where the strength of the polymer was the lowest. The character of the polymer break offered further proof that the original crack occurred on the glass-polymer boundary. Near the broken surface there was a glossy area, becoming dull and rough toward the edges of the polymer. The overstresses near the end of the reinforcing element produced a weakening of the specimens reinforced by either a single rod or by several rods. Reinforcing by previously fragmented rods brought about strength improvement. No advantage was gained by placing the rods at 20 degrees to each other. The authors are grateful to A. L. Rabinovich for discussion of the paper. Orig. art. has: 5 charts and 5 pictures.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute)

SUBMITTED: 13MAY 64

ACCESSION NR: AP4040492 S/0190/64/006/006/1116/1119

AUTHORS: Malinskiy, Yu. M.; Guzeyev, V. V.; Zubov, Yu. A.; Kargin, V. A.

TITLE: Thermodynamics of the deformation of oriented fibers. 1. Temperature dependence of a caprone fiber

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 6, 1964, 1116-1119, and insert facing p. 1073

TOPIC TAGS: caprone fiber, reversible contraction, crystal pulling, shrinkage hysteresis, temperature dependence

ABSTRACT: The authors studied the temperature dependence (in the range 20 to 70C) of the length of polycaprolactam fiber samples, previously pulled to various degrees. The extent of reversible contraction on heating and lengthening on cooling depends upon the degree of the pulling and on the crystallinity. For fibers swollen in water the relation of temperature to change in fiber length is about four times that for air-dried specimens. The temperature dependence of the water content and desorption processes markedly affects this relationship. It is concluded that the phenomenon of reversible contraction during heating is due to the tendency of oriented macromolecules to increase the conformational assemblage,

Card 1/2

ACCESSION NR: AP4040492

which prevails over ordinary thermal linear expansion. Orig. art. has: 1 figure, 1 table, and 4 formulas.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute)

SUBMITTED: 23Jul63 ENCL: 00

SUB CODE: MT NO REF SOV: 005 OTHER: 004

Card 2/2