condensed nuclei, d) Condensed aromatic compounds with a plane configuration of the macromolecules of the (Parquet" type, e) Three-dimensional structures. The "blurring" of the electron cloud in these polymer structures allows the formation of "biradicaloids" or "polyradicaloids", in the latter case also that of polyradicals (Ref 2). As far as it could be experimentally proved, the resistance to heat of the molecules in the cases a. and b. is increased (Refs 3-5). To a still greater extent this is the case in the cases d. and e. (Refs 6,7). The authors deaminated benzidine by the action of active copper. It was obtained by the ammonical cuprous oxide solution on bis-diazo-benzidine compound. A dark red non-meltable polymer was formed, which was partly soluble in organic solvents, and contained nitrogen (see probable formula). A deamination carried out in a similar way with benzidine dicarboxylic-3,3'-acid yielded an externally similar product, which was, however, soluble in alkalies and soda. This substance (Formula) is decarboxylated on heating; thus, a linear polyphenylene

can be obtained. Polymers with aromatic nuclei in the side chain alone consist of more flexible chain molecules. Therefore they are less brittle and less resistant to heat than polyphenylenes. The strength of their intra and intermolecular bonds can, however, be increased by a sufficiently great number of condensed nuclei forming side groups. From all this it may be concluded that the chemistry of the aromatic polymers offers possibilities of producing highly heat resistant materials, having a complex of extremely interesting properties. There are 1 figure, 1 table, and 23 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy produktsii(Moscow Technological Institute of Meat and Milk Production -MTIMMP)Laboratoriya vysokomolekulyarnykh soyedineniy (Laboratory of High-Molecular Compounds) Vsesoyuznyy zaochnyy institut tekstil'noy i legkoy promyshlennosti (All Union Correspondence Institute for Textile and Light Industry) Kafedra obshchey khimii (Chair of General Chemistry)

BERLIN, A.

TECHNOLOGY

Periodical TEKNIKA. Vol. 5, no. 4, July/Aug. 1958.

BERLIN, A. Very light plastic materials, p. 24.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no . 3, March, 1959. Uncl.

BERLIN, A.A.; PAVLOV, D.V.; PUGACHEV, P.I.

Protective film coatings for meat products. Izv.vys.ucheb.zav.; pishch.tekh. no.5:68-73 '58. (MIRA 11:12)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti, kafedra tekhnologii myasa, kafedra fizicheskoy i kolloidnoy khimii.
(Packing house products) (Protective coatings)

BERLIN, A.A.; BARKAN, S.M.

Utilization of polymer materials in the food industry. Izv.vys. ucheb.zav.; pishch.tekh. no.6:3-19 '58. (MIRA 12:5)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti, Kafedra fizicheskoy i kolloidnoy khimii i Kafedra tekhnologii moloka.
(Protective coatings) (Polymers)

AUTHORS: Berlin, A. A., Belyanina, Ye. T. SOV/64-58-6-5/15

TITLE: The Production of Ester Plasticizers by Means of Cationites and Adsorbents (Polucheniye slozhnoefirnykh plastifikatorov s primeneniyem kationitov i adsorbentov)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 6, pp 340-342 (USSR)

ABSTRACT: In connection with the methods of producing plasticizers analyses were carried out regarding new methods of esterification in which no additional purification and distillation is necessary to ensure high quality. In order to obtain plasticizers free from resinous substances, a number of catalysts were tested. Experiments concerning the production of a colorless dibutyl phthalate (DBP) and analogous plasticizers were unsuccessful. According to the references (Ref 1) on cationites as "soft" catalysts of esterification a number of experiments have been carried out. It was stated that the catalytic activity of cationites increases to the degree to which the ion exchange capacity is increased. However, the cationites contaminated the product so that the quality is inferior to that obtained by distillation. The addition of bleaching carbon A, "gumbrine" and clay keel (glina kil),

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The Production of Ester Plasticizers by Means of Cationites and Adsorbents

SOV/64-58-6-5/15

with sulfuric acid as a catalyst, however, made it possible to obtain a colorless ester. A quantity of five per cent (relative to the acid mixture) of the adsorbent (bleaching carbon A), together with the other components, is added at the time when the original mixture is compounded. A table shows that the polyester plasticizers obtained by the method described are of better quality. There are 1 figure, 3 tables, and 1 reference, 1 of which is Soviet.

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5(3)

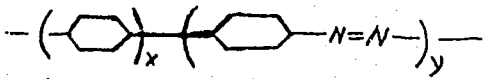
SOV/62-58-12-21/22

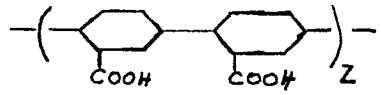
AUTHORS: Parini, V. P., Berlin, A. A.

TITLE: Letter to the ~~Editor (Pis'ma~~ redaktoru)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye khimicheskikh nauk, 1958, Nr 12, pp 1499-1499 (USSR)

ABSTRACT: In this letter to the editor the authors state that: Multinuclear aromatic compounds are characterized by a special resistance to heat. During the last years the synthesis of polyphenylenes has been devoted great attention. We synthesized such compounds by way of the aromatic bis-diazo compounds. Benzidine-bis-diazonium-4,4' salts separate nitrogen on the action of monovalent copper and form a non-fusible nitrogen containing polymer of the probable structure:



An insoluble, non-fusible polymer 

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was obtained by the bis-diazotization of benzidine carboxylic-3,3' acid by the mentioned method with subsequent decomposition of the bis-diazo compound. On heating it separates carbonic acid. Hard foils can be produced from its solutions. The produced poly acid offers new possibilities of synthesizing linear polyphenylenes and their derivatives. Similar transformations can also be obtained by way of the di-(N-nitroso-N-acetyl) diamines.

ASSOCIATION: Laboratoriya anizotropnykh struktur Akademii nauk SSSR (Laboratory of Anisotropic Structures, Academy of Sciences, USSR)

SUBMITTED: June 12, 1958

AUTHOR: Berlin, A. A., (Moscow) 74-27-1-3/4

TITLE: Mechanical and Chemical Transformations and the Synthesis of Polymers (Mekhano-khimicheskiye prevrashcheniya i sintez polimerov)

PERIODICAL: Uspekhi Khimii, 1958, Vol. 27, Nr 1, pp. 94-1o6 (USSR)

ABSTRACT: The mixture, homogenization, mechanical comminution, congelation and other physical and mechanical kinds of working high polymers are applied by industry, especially by plastics industry. Some of these processes are of great importance for chemistry, biochemistry, medicine, and so on. An analysis of the available experimental material permits the conclusion that in an intensive comminution of the natural or synthetic polymers a mechanical cracking of the micro-molecules can be observed. It was ascertained that when mixing the solutions of polymerized substances (in a mixing apparatus of 4ooo revolutions and more) a decrease of the characteristic viscosity happens. The degree of destruction increases with the increasing number of revolutions and after weakening the concentration of the solution. During the congelation and

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defrosting of the polymers (in water) tensions develop, which cause mechanical cracking of the macro-molecules; (see equations 1 and 2). On the chemical transformation of the macro-molecules with destruction of the polymers at the same time: Due to the influence of mechanical forces the three--dimensional structures or the macro-molecules are torn not only in their covalent, but also in ion-compounds. Therefore it is possible that 3 basic destruction processes occur in the polymers.

A formation of the macro-radical is possible if the polymer chains contain covalent compounds. It is also possible that the decomposition of the macro-molecules occurs by way of the ion and covalent compounds. **Pike, Watson** and others already reported on this (see equations p 96). If 2 radicals develop in the tearing of a compound, further transformations can occur in the course of the destruction of the macro-molecules. Moreover the transmission (peredacha) of the chain and the reaction of the destruction of the macro-molecules (under the influence of radicals) is discussed. (see formulae a, b, page 97). One characterictic particularity of the mechanical and chemical initiation and block-copolymerization is the

fact that immediately a transformation of the mechanical work into chemical energy occurs. (See table 1, equations p. 48). A detailed discussion of the copolymerization is following. In a series of papers the opinion was expressed that the development of mechanical and chemical block-copolymers is conditioned by the combination processes of the polymer radicals. The author has different reasons to doubt this possibility. Also many experimental facts in these papers are not explained. As a result of the initiated destruction new macro-radicals develop, continuing this chain process. (See scheme on page 1o4). The development of the mechano-chemical methods (synthesis of high polymers) is still in its initial stage. This new and individual way, however, offers great advantages, which have to be closer investigated. There are 1 figure, 3 tables, and 46 references, 19 of which are Soviet.

1. Polymers--Synthesis 2. Polymers--Mechanical properties

BERLIN, A.A.

AUTHOR: Berlin, A. A., Doctor of Technical Sciences, Professor. 29-3-5/25

TITLE: Extremely Light Plastics (Sverkhlegkiye plastmassy)

PERIODICAL: Tekhnika Molodezhi, 1958, V. 26, Nr 3, pp. 8-9 (USSR).

ABSTRACT: The development of modern engineering put to scientists and researchers the great problem of constantly finding new materials. Besides their durability, these must be of extremely light weight and have most various technical properties, and must be usuable in various fields of production. The reduction of the specific weight of plastics is achieved by filling the greater part of their volume with air, nitrogen, or other gases. Their structure reminds solidified foam (cellular plastics) or they are characterized by a honey-comb structure (alveolar plastics, cellular and alveolar plastics are the lightest among all natural or synthetic substances known). 1 m^3 of some cellular plastics weighs 10 kilograms. This signifies that they are 700 times lighter than steel, 100 times lighter than water, 80 times lighter than wood and 30 times lighter than cork. The method of obtaining cellular plastics with vast application on the basis

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of the socalled "injected copolymers" elaborated by the scientists of the Soviet-Union in 1946, opens vast prospects. Recently Soviet scientists were successful in elaborating a method by which the most various synthetic substances are obtained by means of polymers, and by which the application of pressure becomes superfluous. The production of cellular plastics can thus be carried out immediately at the place of application, without complicated apparatus. The properties of plastics are most various: some are hard like glass, others elastic like rubber. Some soften at 60 to 100°C, others do not melt at 200 to 300°C and more. Due to the universal properties of cellular plastics they are very much demnaded by industry. There are also hard-porous and microporous synthetics. These materials are of great importance in the manufacture of chemical apparatus, water-purification plants and for the collecting of valuable industrial waste material; they are of special importance in the manufacture of separators and accumulators. The development of technics constantly puts greater demands. The manufacture of a steadily increasing number of new types of extremely-light synthetics fit for construction purposes, is required. Heat-resisting (over 300 to 350°C), insulating and weather-resistant materials which also resist against aggressive media, are required.

1. Plastics-Development 2. Plastics-Physical properties
3. Plastics-Design 4. Plastics-USSR

5(4), 15(9) SOV/76-32-11-16/32

AUTHORS: Berlin, A. A., Petrov, G. S., Prosvirkina, V. F.

TITLE: Investigations in the Field of the Mechano-Chemistry of Polymers (Issledovaniya v oblasti mekhanokhimii polimerov) III. On the Mechano-Chemical Processes in the Mastication of Polyvinyl Chloride (III. O mekhanokhimicheskikh protsessakh pri val'tsevanii polivinilkhlorida)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 11, pp 2565-2570 (USSR)

ABSTRACT: The mechanism and the kinetics of the plasticization process of polyvinyl chloride in the presence of softeners and phenol-formaldehyde resins in air are investigated. The processing was carried out on laboratory rolls with a friction number of 1.4 at a temperature of from 40 to 160°. An increase of the mastication temperature (Figs 1,2) decreases the limit of destruction, it hardly influences, however, the velocity of the plasticization in the first 3-5 minutes. The addition of the softener (dibutyl phthalate) at 40-60° decreases the destruction velocity (Fig 3), it has, however, little effect on the limit of destruction. Investigations of the thermo-

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Investigations in the Field of the Mechano-Chemistry of Polymers. III. On the Mechano-Chemical Processes in the Mastication of Polyvinyl Chloride

dynamic properties with the apparatus by V. A. Kargin (in the modified type by L. A. Igonin) proved the observations made. A decrease of the mastication temperature leads to a decrease of the range of high elasticity. The increase of the content of softeners decreases the influence of the mastication on the change of the thermodynamic properties of the plasticization product (Fig 5). During the mastication of PVC in air reactive peroxide radicals are formed. Iodine has a specific acceptor effect on the polymer which depends on the mastication temperature. Mastications carried out with phenol-formaldehyde resins and PVC in the presence of softeners (20%) showed (Table 2) that one part of the resins (15-17%) with PVC forms products that cannot be extracted with methanol.
There are 6 figures, 2 tables, and 8 references, 5 of which are Soviet.

ASSOCIATION: Institut plasticheskikh mass, Moskva (Institute of Plastics, Moscow)

SOV/20-121-4-20/54

AUTHORS: Berlin, A. A., Stupen', L. V., Fedoseyeva, B. I., Yanovskiy, D. M.

TITLE: An Investigation of the Initiated Copolymerization of Vinyl Chloride With Derivatives of the Methacryl Series (Issledovaniye privitoy sopolimerizatsii vinilkhlorida s proizvodnymi metakrilovogo ryada)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 4, pp. 644 - 647 (USSR)

ABSTRACT: If a monomer is polymerized in the presence of polymeric substances it is often subjected to the influence of the radicals of growing chains or of the initiator. In this connection it is possible that as a result of chain transfer active centers are formed on the macromolecules. These centers are able to initiate the polymerization of the monomer resulting in the formation of compounds of high molecular weight with a racemic or threedimensional structure. In case that the side ramifications are of different chemical nature than the main chain, inoculated copolymers form. They combine the properties of the polymers used for the reaction

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(Refs 1-6). This paper gives experimental results on synthesis and investigation of the inoculated polymers which are formed by the polymerization of vinyl chloride in the latex of the copolymer of butyl methacrylate and methacrylic acid (henceforth both referred to as BMA). Further results are mentioned of those polymers forming by the polymerization of a butyl methacrylate- and methacrylic acid mixture in the polyvinyl chloride (PVCh) latex. As table 1 shows the Khaggins constants are higher in the case of inoculated polymers than in the case of linear control polymers. This fact points to a ramification due to the formation of side chains. The mentioned constants of the PVCh- and BMA mixtures are between the constants of individual polymers and are close to the additive values. More than 60% of the monomer enters the reaction with the polymer (coefficient f). Furthermore the polymer solutions were turbodimetrically titrated in dioxane or in a mixture of dimethyl formamide with acetone. Figure 1 shows that a separate precipitation takes place when a mixture of polymers is titrated, whereas the curve of precipitation of polymerizate sample of vinylchloride

in the BMA latex refers to the existence of an inoculated copolymer. Table 2 shows that the increase of the amount of vinylchloride in the mixture of components elevates the yield-(utilization)coefficient f. The addition of a regulator (CCl_4, CHJ_3) abruptly reduces the yield of the inoculated copolymer in consequence of the inactivation of a part of the macroradicals. At the end thermochemical properties and further details of production are mentioned. There are 4 figures, 2 tables, and 8 references, 6 of which are Soviet.

PRESENTED: April 3, 1958, by N.N.Semenov, Member, Academy of Sciences, USSR

SUBMITTED: April 1, 1958

AUTHORS: Baranovskaya, N. B., SOV/20-122-4-17/57
Zakharova, M. Z., Mizikin, A. I., Berlin, A. A.

TITLE: Catalytic Solidification of Polydimethylsiloxane at Room Temperature (Kataliticheskoye otverzhdeniye polidimetilsiloksana pri komnatnoy temperature)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 4, pp 603-606 (USSR)

ABSTRACT: It is known that the transformation process of linear and branched alkylpolysiloxanes takes place in a non-fusible and insoluble state at 200-250° and demands a longer time. This fact complicates the process and limits the range of use of the silicon organic polymers considerably. Since nothing worth mentioning could be found in the publications (except the Refs 1, 2 for silastic /silastik/RTV) the authors decided to exploit the interaction between hydroxyl groups of the linear polydimethylsiloxanes and the alkoxy groups of the polyfunctional silicon organic monomers in order to produce tri-dimensional alkylpolysiloxanes. Such a formation method of transverse siloxane compounds is more favorable from the energetic point of view than the stripping of the hydrogen

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or of an alkyl radical from the polymeric chain (in the case of a common thermal vulcanization) and could therefore pass at much lower temperatures. The authors investigated the catalytic activity of some orthotitanic acid esters (ethyl-, propyl-, and butyl ester) in order to find effective accelerators for this purpose. Furthermore they investigated a number of tin organic compounds (mostly of the group of the dialkyl tin which contained acetyl, capryl, and stearyl). The caprylates and stearates were synthetized for the first time. The phenomenon of cold vulcanization of liquid and rubber-like polydimethylsiloxanes was expressed in all cases by a gradual increase of the viscosity and the shear stress of the polymer, its elastic properties increased, its solubility was, however, reduced. Figures 1 and 2 show curves which illustrate the change of the shear stress (Π) and recovery of the polymer under the influence of the organotin and organotitanium compounds. Table 1 shows some properties of the vulcanizates. The measurement results show a great change of the vulcanization process according to the type of the used organometallic compound: orthotitanic acid ester or an organotin compound (Figs 3 and 4). The observed rules can be

explained by the formation of an active complex (scheme page 606). The method of "cold" vulcanization worked out by the authors may be applied for the production of rubber material, cast combinations, rubber-soaked tissues, coats, and compounds which can be solidified at room temperature. The rubbers thus produced have much better properties than rubber of the same composition which was vulcanized according to the method used hitherto. Ye. N. Zil'berman, N.A. Rybakova, O. V. Nogina assisted in this paper. There are 4 figures, 2 tables, and 4 references, 1 of which is Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut aviatsionnykh materialov (All Union Scientific Research Institute of Airplane Material)

PRESENTED: April 28, 1958, by A. V. Topchiyev, Member, Academy of Sciences, USSR

SUBMITTED: April 28, 1958

Catalytic Solidification of Polydimethylsiloxane at Room Temperature

SOV/20-122-4-17/57

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5(3)

AUTHORS: Berlin, A. A., Popova, G. L., Isayeva, Ye. F.

SOV/20-123-2-20/50

TITLE: Condensation Telomerization and a New Type of Unsaturated Polyesters (Polyester Acrylates) (O kondensatsionnoy telomerizatsii i novom tipe nepredel'nykh poliefirov (poliefirakrilaty))

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 2, pp 282 - 284 (USSR)

ABSTRACT: The di- and polyfunctional acrylates differ from the corresponding simple di-esters of allyl and vinyl alcohol by the fact that the velocity of their polymerization increases with the increase of the distances between the double bonds (Refs 1, 2). The possibility of producing highly active di- and polyfunctional monomers with a considerable length of the cross connections is theoretically as well as practically of interest. It is possible: 1.-That the elasticity of the cross connection is varied. 2.-The contraction in the transition from the monomer to the polymer is controlled. 3.-Heat-resistant polymers with a wide range of physical and mechanical properties are produced. For the

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synthesis of such substances the authors used the principle of the control of the growth of the chain in the polyesterification of dibasic acids by glycols and glycerin by means of the addition of methacrylic- (or acrylic) acid. This method of producing relatively low-molecular compounds with a predetermined type of functional end groups can be regarded as an example of telomerization taking place according to a condensation mechanism ("condensation telomerization"). The mechanism of this type of reaction is still unknown. There is reason to believe that acidolysis processes take place in the polyesterification. A probable formation scheme of the polyesters in question (the authors call it "polyester acrylates"(poliefirakrilaty)) is given. The mentioned telomerization was carried out in the medium of inert solvents (benzene, toluene) with an azeotropic distilling off of the reaction water. Phosphoric, sulfuric, ethyl-sulfuric and p-toluene-sulfonic acids were used as catalysts. The highest velocity (8 - 12 hours) and the best yields (85 - 95%) were obtained when using a 2 - 3% sulfuric or p-toluene-sulfonic acid in the presence of 0.5 - 0.8% hydroquinone.

Condensation Telomerization and a New Type of Unsaturated Polyesters (Polyester Acrylates) SOV/20-123-2-20/50

The degree of polymerization mainly depends on the dosing of the methacrylic (or acrylic) acid. The fractional distillation of the polyester acrylates failed due to their low volatility and their great tendency to polymerize. The substances mentioned above are more and more used for the production of various polymeric materials. There are 2 tables and 5 references, 4 of which are Soviet.

PRESENTED: June 25, 1958 by A. V. Topchiyev, Academician

SUBMITTED: June 23, 1958

Card 3/3

BERLIN, Al'fred Avisimovich, prof.; FAYNBOYM, I.B., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[Superlight and structural plastics] Sverkhlegkie i konstruktsionnye plastmassy. Moskva, Izd-vo "Znanie," 1959. 31 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.9, Fizika i khimiia, no.17). (MIRA 13:3)
(Plastics)

GENEL', Samuil Veniaminovich; BERLIN, A.A., otv.red.; FOLOMIN, A.I., red.izd-va; MARKOVICH, S.G., tekhn.red.

[Wood plastics in engineering] Drevesnye plastiki v tekhnike. Moskva, Izd-vo Akad.nauk SSSR, 1959. 85 p. (Wood) (MIRA 12:6)

BERLIN, Al'fred Anisimovich; BARKAN, Solomon Mendelevich; LOSEV, I.P., otv.red.; VYAZEMTSEVA, V.N., red.izd-va; YEGOROVA, N.F., tekhn.red.

[Polymers in the food industry and in agriculture] Polimery v pishchevoi promyshlennosti i sel'skom khoziaistve. Moskva, Izd-vo Akad.nauk SSSR, 1959. 90 p. (MIRA 12:9)
(Plastics)

BERLIN, A.A.; SURKOV, V.D.; BARKAN, S.M.

Utilization of paraffin-polyisobutylene compositions for the manufacture of moisture-resistant packaging materials. Izv.vys.ucheb. zav.; pishch.tekh. no.1:94-99 '59. (MIRA 12:6)

1. Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti, kafedra tekhnologii moloka i molochnykh produktov.
(Packaging)

BERLIN, A. A.

N. B. Baranovskaya, A. A. Berlin, M. Z. Zakharova and A. I. Mizikin, "The Vulcanization of Liquid and Rubber-like Polydimethylsilicoxanes at Room Temperature."

Report presented at the Second All-Union Conference on the Chemistry and Practical Application of Silicon-Organic Compounds held in Leningrad from 25-27 September 1959.
Zhurnal prikladnoy khimii, 1959, Nr 1, pp 238-240 (USSR)

BERLIN, A.A.; EL'TSEFON, B.S.

Investigation in the mechanochemistry of polymers. Part 6: Investigating the distintegration of polystyrene in solutions under the action of ultrasonic waves. Vysokom.soed. 1 no.5:688-697 My '59. (MIRA 12:10)

1. Laboratoriya polimernykh materialov Moskovskogo tekhnicheskogo instituta myaso-molochnoy promyshlennosti.
(Styrene) (Ultrasonic waves)

BUTYAGIN, P.Yu.; BERLIN, A.A.; KALMANSON, A.E.; BLYUMENFEL'D, L.A.

Formation of macroradicals in the mechanical destruction of vitrified polymers. Vysokom. soed. 1 no.6:865-868 Je '59.
(MIRA 12:10)

1.Laboratoriya anizotropnykh struktur AN SSSR.
(Polymers) (Radicals (Chemistry))

BERLIN, A.A.; POPOVA, G.L.; ISAYEVA, Ye.F.

Polymerization and properties of polymers of mixed polysters of the acrylic series. Vysoko.soed. 1 no.7 Jl '59. (MIRA 12:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut aviatsionnykh materialov.

(Acrylic acid)

BERLIN, A.A.; DABAGOVA, A.K.

Synthesis and polymerization of glycidylurethans. Vysokom.soed. 1 no.7:946-950 Jl '59. (MIRA 12:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut aviatsionnykh materialov.
(Urethans) (Polymerization) (Glycidic acid)

BERLIN, A.A.; POPOVA, G.L.; ISAYEVA, Ye.F.

Condensation telomerization and synthesis of a new type of unsaturated polyesters. Vysokom.soed. 1 no.7:951-956 Jl '59. (MIRA 12:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut aviatsionnykh materialov.

(Esters) (Polymerization)

BERLIN, A.A.; POPOVA, G.L.; MAKAROVA. T.A.

Synthesis, polymerization, and adhesive properties of the copolymers of unsaturated esters of glycidol. Vysokom.soed. 1 no.7:962-965 Jl '59. (MIRA 12:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut aviatsionnykh materialov.
(Glycidol) (Polymerization)

BERLIN, A.A.; BLYUMENFEL'D, L.A.; CHERKASHIN, M.I.; KAIMANSON, A.E.; SEL'SKAYA, C.G.

Polymers with conjugated bonds in the macromolecular chains. Part 2: Paramagnetism and certain other properties of polyarylvinylenes. Vysokom. soed. 1 no.9:1361-1363 S '59. (MIRA 13:3)

1. Laboratoriya anizotropnykh struktur AN SSSR.
(Polymers) (Vinylene compounds)

KOROLEV, G.V.; PAVLOV, B.V.; BERLIN, A.A.

Thermometry as a method of studying polymerization kinetics.
Part 1: Principles of the method and the experimental setup.
Vysokom. soed. 1 no.9:1396-1402 S '59. (MIRA 13:3)

1.Laboratoriya anizotropnykh struktur AN SSSR.
(Polymerization) (Chemical apparatus)

SOV/153-2-4-29/32

5(1,3), 3o(1)

AUTHORS: Berlin, A. A., Bakanova, Ye. G.

TITLE: Production of Stable Emulsions, Having a Washing Effect, From DDT

PERIODICAL: Izvestiya vysshikh uchebnykb zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 4, pp 622 - 625 (USSR)

ABSTRACT: The use of aqueous dispersions of insecticides in various branches of industry, agriculture, and medicine has been increasing (Ref 1). In this connection, the discovery of economical production methods for stable emulsions, of DDT solutions in petroleum, and other solvents with washing properties in addition to highly insecticide effects has become necessary. In order to solve this problem, the authors tested the following emulsifiers and stabilizers: polyethylene-glycol esters of alkyl phenols (OP-4, OP-7, OP-1o, OP-2o, etc), moreover, emulsifiers produced from protein waste, technical starch, sulfite lyes, oxyethyl- and carboxymethyl cellulose, sodium alginate, the diethyl-aminomethyl-derivative salt of alkyl-phenol-polyethylene-glycol ester (equalizer A). Among the stabilizers mentioned, water-soluble keratin (keratein) is

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especially interesting. Figure 1 characterizes the surface activity of the emulsifiers investigated. Hence it appears that the most active ones are: OP-4, OP-7 and keratein (dissolution product of waste containing keratin in 3-10% sodium-sulfide solutions, or in 1-3% alkali solutions at 60-80°,Ref 2). Table 1 shows the effect of the addition of OP-4 to keratein on the properties of the emulsions (turpentine in water). Hence it appears that the stability and emulsifying capacity of keratein rapidly increase by a 0.1 to 0.01% OP-4 addition. Comparatively highly disperse, stable emulsions are formed. They did not dissociate into layers, even after a three-month storage (Fig 2). In order to obtain maximum homogenization of the emulsification of DDT-solutions, they were put into an ultrasonic field. The best results were obtained with a frequency of 20-300 kilocycles (Ref 3). The emulsions were sufficiently stable (Fig 3). The washing capacity was tested by means of artificially soiled cotton samples in hard water for 20 minutes. The rinsed and dried samples were photometrically recorded. Tables 2 and 4 show the results. Thus, the addition of OP-4 to keratein increases the stabilizing effect

as well as the foam-forming capacity of the protein. The same emulsifier rendered possible the production of concentrated aqueous stable suspensions of DDT- or hexachlorocyclohexane solutions in turpentine with a content of active substance of 60-65%, 20-25% of fatty acids in soaps may be substituted by keratein. Soaps thus modified have a higher foam-formation- and washing capacity. Thus, considerable amounts of edible fats can be obtained from the soap industry, and can be used for consumption. There are 4 figures, 2 tables, and 5 Soviet references.

ASSOCIATION: Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti; Laboratoriya vysokomolekulyarnykh soyedineniy (Moscow Technological Institute of Meat and Milk Industry, Laboratory of High -molecular Compounds)

SUBMITTED: June 11, 1958

BERLIN, A.A.

SOV/64-59-5-26/28

5(1)
AUTHOR: None Given

TITLE: 11th All-Union Conference on High-molecular Compounds

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 5, p 459 (USSR)

ABSTRACT: The 11th All-Union Conference on high-molecular compounds was convened in Moscow by Otdeleniye khimicheskikh nauk AN SSSR (Section of Chemical Sciences of AS,USSR), Gosudarstvennyy komitet Soveta Ministrov SSSR po khimii (State Committee of the Council of Ministers of USSR for Chemistry), Vsesoyuznoye khimicheskoye obshchestvo imeni D. I. Mendeleyeva (All-Union Chemical Society imeni D. I. Mendeleyev) and Moskovskiy gosudarstvennyy universitet (Moscow State University) during the time from June 2nd to 7th of this year. About 2000 persons participated in this Conference, discussing problems of the application and utilization of polymer materials. The Conference was opened by Academician N. N. Semenov. Among others, the following lectures were held in the plenary sessions: Relations between structure and properties, of high-molecular compounds, by Academician V. A. Kargin:methods of altering the properties

Card 1/2

of polymers, by Professor A. A. Berlin. During the Conference 8 study groups discussed problems of films, coating and adhesive materials, dielectrics, caoutchouc and rubber, chemical fibers, polymer materials for building, test methods for polymer materials, utilization of synthetics and, finally, polymer materials in machine construction. 203 lectures were held on the different application possibilities of polymers, and on the present position of scientific research and industry in this field. It was one of the tasks of the Conference to organize the contact between the different organizations working in the same field (Akademiya nauk SSSR (Academy of Sciences of the USSR), Akademiya nauk soyuznykh respublik (Academy of Sciences of the Union Republics), Goskomitet po khimii (State Committee of Chemistry), institutions of higher learning, sovnarkhozes, Ministerstvo stroitel'stva (Ministry of Construction), Akademiya arkhitektury i stroitel'stva (Academy of Architecture and Building), Ministerstvo kul'tury (Ministry of Culture), Ministerstvo zdravookhraneniya (Ministry of Hygiene) etc). The resolution adopted by the Conference may only be realized by adequate assistance of the Academy of Sciences of the USSR, the State Committee of Chemistry, the Gosplan and other organizations.

SOV/62-59-9-35/40

5(3)
AUTHORS: Berlin, A. A., Blyumenfel'd, L. A., Semenov, N. N.

TITLE: On Catalytic Properties of Some Macromolecular Structures

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, p 1689 (USSR)

ABSTRACT: The anomalous magnetic properties of nucleic acids and their protein complexes, i.e. intense and wide lines in the electron paramagnetic resonance spectrum, which indicate the existence of a considerable number of odd electrons correspond to magnetic properties otherwise found only in ferromagnetic and antiferromagnetic substances. Synthetic compounds containing nitrogen and polar groups in a chain of conjugated double bonds show the same effect (Refs 2, 3). On intensifying the magnetic field these compounds exhibit a saturation effect characteristic of ferromagnetism. The cause of this behavior is seen in the existence of a shell of odd electrons enclosing the entire macromolecule, which causes these compounds to act as strong catalysts. These catalysts are particularly suitable for redox processes and reactions involving the formation of free radicals. Thus, e.g. polyaminoquinone is a catalyst for the decomposition of hydrogen peroxyde.

Card 1/2

On Catalytic Properties of Some Macromolecular Structures

SOV/62-59-9-35/40

The catalytic activity of proteins and other macromolecular substances is also the reason for their strong biochemical effect. Preliminary measurements of the magnetic susceptibility of nucleic acids and synthetic polymers were carried out by V. I. Belova at the Institute of General and Inorganic Chemistry AS USSR, and A. A. Slinkin at the Institute of Organic Chemistry AS USSR. There are 3 Soviet references.

ASSOCIATION: Laboratoriya anizotropnykh struktur Akademii nauk SSSR (Laboratory for Anisotropic Structures of the Academy of Sciences, USSR)

SUBMITTED: June 5, 1959

Card 2/2

BERLIN, A.A.; MATVEYEVA, N.G.

Polymers with conjugated bonds in the macromolecular chains. Part 3: Polyaminoquinones. Vysokom.soed. 1 no.11:1643-1646 N '59. (MIRA 13:5)

1. Institut khimicheskoy fiziki AN SSSR.
(Quinones) (Polymers)

BLYUMENFEL'D, L.A.; BERLIN, A.A.; MATVEYEVA, N.G.; KALMANSON, A.E.

Polymers with conjugated bonds in the macromolecular chains. Part 4: Some characteristics of polymeric compounds having different atoms in the chain of conjugation. Vysokom.soed. 1 no.11:1647-1651 N '59. (MIRA 13:5)

1. Laboratoriya anizotropnykh struktur AN SSSR.
(Polymers)

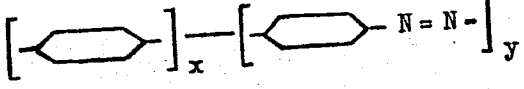
5(3) SOV/62-59-9-29/40

AUTHORS: Berlin, A. A., Parini, V. P.

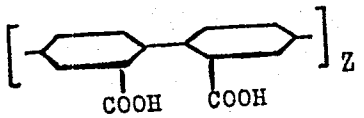
TITLE: On the Synthesis of Aromatic Polymers Via Bis-diazo Compounds

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1674-1676 (USSR)

ABSTRACT: In the present paper the synthesis of polycyclic aromatic compounds becoming of increasing interest owing to their high chemical stability is reported. The following observation was utilized for synthesis: The biphenyl-4,4'-bisdiazonium salts split off nitrogen on treatment with copper (I) compounds and form a nitrogen containing non-fusible polymer with the tentative composition



(I)



(II)

Card 1/3

On the Synthesis of Aromatic Polymers Via Bis-diazo Compounds

SOV/62-59-9-29/40

In this manner a bis-diazotized benzidinedicarboxylic acid was transformed to a bisdiazo compound of the type (II), which contained approximately 2% nitrogen. (I) and (II) are not fusible, both dissolve in concentrated H_2SO_4 giving a purple solution, (I) is also soluble in alkali and formamide. From the low viscosity of their solutions the authors conclude (I) and (II) to have a low degree of polymerization. The results of the ultimate analysis are given in a table. The compound (II) was found to contain 1 carboxyl-group to each benzene ring. The existence of free radicals in both compounds was verified by electron paramagnetic resonance spectra. Furthermore, it is concluded, that both compounds contain azo groups, (I) 1 azo group/4 benzene rings, and (II) 1 azo group/10 benzene rings. Cl and O-O function as terminal groups. The stability is explained by the high degree of dislocation of the π-electrons. The weak electron paramagnetic resonance of (II) is explained by the destruction of coplanarity of the molecule by the two COOH-groups. Investigation of the thermal stability of the substances showed (I) to decompose at 400 and (II) at 450°C. After heating, (II) was insoluble in alkaline mediums. Finally, the authors express their thanks to

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On the Synthesis of Aromatic Polymers Via Bis-diazo Compounds

SOV/62-59-9-29/40

A. E. Kalmanson and L. A. Blyumenfel'd for taking and interpreting the EPR-spectrum, and I. P. Yakovlev for the infrared spectrum. There are 1 figure, 1 table, and 4 references, 3 of which are Soviet.

ASSOCIATION: Laboratoriya anizotropnykh struktur Akademii nauk SSSR (Laboratory for Anisotropic Structures of the Academy of Sciences, USSR)

SUBMITTED: February 25, 1959

Card 3/3

BERLIN, A.A.; DUBINSKAYA, A.M.

Studies in the mechanochemistry of polymers. Part 8: Degradation of polydimethylsiloxane by ultrasonic waves. Vysokom.soed. 1 no.11:1678-1684 N '59. (MIRA 13:5)

1. Institut khimicheskoy fiziki AN SSSR.
(Siloxanes) (Ultrasonic waves)

BERLIN, A.A.; CHERKASHIN, M.I.; SEL'SKAYA, O.G.; LIMANOV, V.Ye.

Polymers with conjugated bonds in the chains of the macromolecules. Part 5: Synthesis and certain properties of polyarylvinylenes. Vysokom.soed. 1 no.12:1817-1820 D '59. (MIRA 13:5)

1. Institut khimicheskoy fiziki AN SSSR.
(Vinylene compounds) (Polymers)

5.3610,5.3832

77098
SOV/62-59-12-42/43

AUTHORS: Berlin, A. A., Matveyeva, N. G.

TITLE: Letters to the Editor

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 12, p 2260 (USSR)

ABSTRACT: Polycondensation of equimolar amounts of chloranil and benzidine in 2 M sodium acetate in methanol solution gave polymers with 2 chlorine atoms in the basic unit. These polymers were soluble in sulfuric and formic acid, and soluble to a large extent in dimethylformamide. Equimolar amounts of chloranil and benzidine in dimethylformamide in presence of a 2-fold excess of sodium acetate gave polymers in which chlorine atoms were replaced by acetate radicals. Such polymers were soluble in sulfuric acid and insoluble in dimethylformamide. Their suggested structure is shown in (1).

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Letters to the Editor

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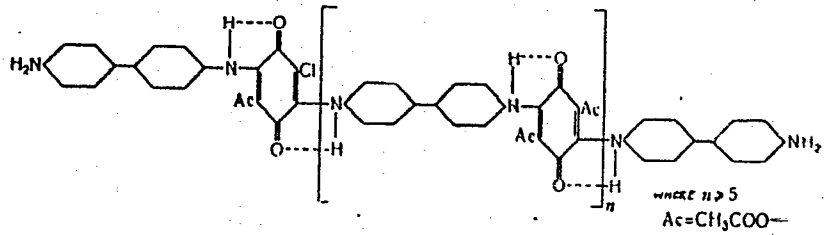
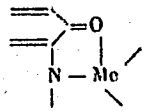
SOV/62-59-12-42/43



These polyaminoquinones showed high magnetic susceptibility ($K = 1.28 \cdot 10^6$). The distance between the paramagnetic resonance maxima was 500-600 oersted. Polyaminoquinones formed infusible and insoluble complexes with copper and other metals, with 8-15% metal content, of a suggested structure:



Card 2/3

Letters to the Editor

77098
SOV/62-59-12-42/43

ASSOCIATION: Anisotropic Structures Laboratory, Academy of Sciences, USSR (Laboratoriya anizotropnykh struktur Akademii nauk SSSR)

SUBMITTED: June 5, 1959

Card 3/3

5.3700

77099
SOV/62-59-12-43/43

AUTHORS: Berlin, A. A., Matveyeva, N. G., Sherle, A. I.

TITLE: Letters to the Editor

PERIODICAL: Izv estiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk 1959, Nr 12, p 2261 (USSR)

ABSTRACT: Reaction of 1 mole of copper salt of acetylacetone with 2 moles of tetracyanoethylene under vacuum, at 160-300°, proceeded with formation of a complex polymer and separation of acetylacetone. The polymer (infusible black substance) was insoluble in organic solvents, in bases and diluted acids. IR absorption spectrum showed no intense absorption bands in the 700-3,000 cm^{-1} range, with the exception of a 2,224 cm^{-1} band corresponding to the CN-group. The following structure of the chelate was suggested:

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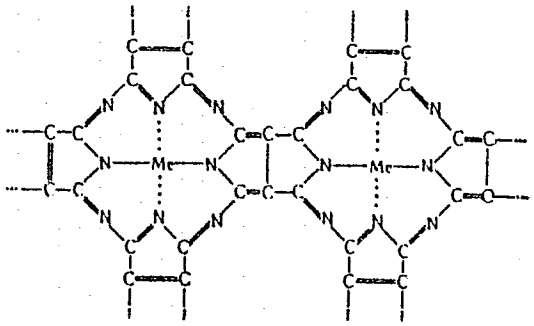
Letters to the Editor

77099
SOV/62-59-12-43/43



Elemental analysis showed the presence of acetylacetonate groups. Electron paramagnetic resonance spectrum showed broad intense lines with 500-700 oersted separation between peaks. An eqiomolar mixture of copper salt of acetylacetone, tetracyanoethylene, and fluoronitrile gave a copolymeric chelate with a presumably bandlike structure.

Card 2/3

Letters to the Editor

77099
SOV/62-59-12-43/43

ASSOCIATION: Anisotropic Structures Laboratory, Academy of Sciences, USSR (Laboratoriya anizotropicheskikh struktur Akademii nauk SSSR)

SUBMITTED: June 5, 1959

Card 3/3

SOV/80-32-4-28/47

5(3), 15(9)

AUTHORS: Berlin, A.A., Zil'berman, Ye.N., Rybakova, N.A., Sharetskiy, A.M. and Yanovskiy, D.M.

TITLE: Investigation of Some Epoxide Stabilizers for Polyvinylchloride (Issledovaniye nekotorykh epoksidnykh stabilizatorov polivinilkhlorida)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 4, pp 863-868 (USSR)

ABSTRACT: One of the most important of chlorine-containing polymers is their low resistance to the effects of heat and light. Various stabilizers have been proposed for increasing their thermal resistance. The present article furnishes comparative data on the stabilizing effect of some commercial and newly synthesized (by the authors) compounds. The following stabilizers for polyvinylchloride have been synthesized and tested: low-molecular epoxide resins on the base of epichlorohydrin and 2,2-bis(4-oxy-3-methylphenyl)-propane, 1,1-bis-(4-oxyphenyl)-cyclohexane, 1,1-bis-(4-oxy-3-methylphenyl)-cyclohexane and 2,2-bis-(4-oxy-3-nitrophenyl)-propane; cis-9,10-epoxybutyl stearate, epoxidized castor oil and sperm oil. It has been shown that these compounds, with exception

Card 1/2

Investigation of Some Epoxide Stabilizers for Polyvinylchloride

of 2,2-bis-(4-oxy-3-nitrophenyl)-propane are effective thermostabilizers for polyvinylchloride, which improve also physicomechanical properties of the masticated rubber. The application of mixtures of low-molecular epoxide resins or epoxidized triglycerides with lead silicate makes it possible to attain a greater thermal resistance of polyvinylchloride and a better quality of the masticated rubber, than the separate application of those stabilizers.
There are 2 graphs, 2 tables and 10 references, 1 of which is Soviet, 5 English, 2 American and 2 German.

SUBMITTED: September 20, 1957

Card 2/2

5.3832

75672
SOV/80-32-10-21/51

AUTHORS: Berlin, A. A., Lesina, K. P.

TITLE: Concerning the Air Moisture Transmission Through Some Organic Polymer Films

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2252-2257 (USSR)

ABSTRACT: This is Communication #13 of the series of investigations in the field of polymer chemistry and technology. The study deals with the determination of the permeability of various plastic films to atmospheric humidity. The lowest permeability was shown by copolymers of vinyl chloride with vinylidene chloride (SVKh-40), 0.1 to 0.3 mg/cm^2.24 hrs for films of 60-100 μ gage, as compared with the high permeability of polyvinyl chloride film (0.7 to 1 mg/cm^2. .24 hrs for films of 70-80 μ gage). Investigation of films with relatively high permeability, such as those based on polymethylmethacrylate (PMM) and perchlorovinyl, showed a sharp decrease of permeability with increasing

Card 1/2

Concerning the Air Moisture Transmission Through Some Organic Polymer Films

75672
SOV/80-32-10-21/51

film thickness. The nature of the plasticizer, and particularly the degree of solubility of vapor particles in the plasticizer, affected considerably the permeability of the film. Tributyl phosphate, butyl stearate, and dibutyl phthalate increased the permeability, whereas dioctyl phthalate, chlorinated paraffin, and ethyl acetoricinoleate gave Cl-containing vinyl polymers and copolymers with higher elasticity and lower permeability than that of films without plasticizer; the lowest permeability was obtained with dioctyl phthalate. SVKh-40 film darkened quickly under light and heat and decomposed at 150° as HCl was detached from the chain. The photo- and thermostability was increased considerably by addition of some epoxy-type stabilizers, particularly that of tolylene diisocyanate-diglycidol polyurethane. There are 7 tables; 1 figure; and 6 references, 1 U.S., 5 Soviet. The U.S. reference is: Strohmit, E., Mod. Plast., 19, 2 (1945).

SUBMITTED: October 16, 1958
Card 2/2

5(3)
AUTHORS: Berlin, A. A., Popova, G. L., Isayeva, Ye. F. SOV/20-126-1-22/62

TITLE: Investigation of the Polymerization and Properties of Mixed Polyethers of the Acryl Series (Issledovaniye polimerizatsii i svoystv smeshannykh poliefirov akrilovogo ryada)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 83-85 (USSR)

ABSTRACT: The authors reported in a previous paper (Ref 1) on the synthesis of a new group of derivatives of the acryl series - the polyester acrylates. In the present paper the relation between the structure of these substances, their capacity of a tridimensional polymerization, and the physical-mechanical properties of the polymers were investigated. The following compounds served for this purpose: 1) dimethacrylate-(bis-ethylene-glycol)-phthalate,
2) dimethacrylate-(bis-diethylene-glycol)-phthalate,
3) dimethacrylate-(bis-triethylene-glycol)-phthalate,
4) dimethacrylate-(bis-triethylene-glycol)-sebacinate,
5) tetramethacrylate-(bis-glycerin)-phthalate, and
6) tetramethacrylate-(bis-glycerin)-sebacinate.
The substances enumerated differed from one another by the dimensions and flexibility of the groups which form the cross connections of the spatial structure of the polymer as well as by

Card 1/4

the number of reactive double bonds. The polymerization was carried out at 65° and 20-25° in the presence of benzoyl peroxide. The investigation of the polymerization kinetics showed that the polymerization of the tetra- and octo-functional polyester acrylates is in all cases preceded by an induction period. During this period neither the viscosity nor the refractive index change. In the subsequent period the whole mass of the monomer is instantaneously gelatinized. The fluidity vanished completely and insoluble tridimensional polymers were produced. The rates of polymerization of an octo-functional substance (above mentioned Nr 5, Figs 1:1) and of a tetra-functional (Nr 2, Figs 1:2) were compared in order to clarify the effect of the molecular functional capacity of the polyester acrylates on their capacity of a tridimensional polymerization. This shows that the rate of polymerization rises rapidly with the increase of the number of double bonds. The octo-functional Nr 5 and 6 are in contrast to the tetra-functional ones able to produce glasslike polymers (Fig 2). The comparison of the curves 1 and 2 (Fig 2 cursive) shows that the rate of polymerization of different esters of the

same functional capacity depends on the distance of the reactive groups from one another. Atmospheric oxygen inhibits the polymerization reaction. The introduction of a siccative eliminates the last mentioned phenomenon. Table 1 shows the toughness and the strength of the non-meltable glasslike polymers with the reduction of the density of packing of the cross-linked (sshityy) chain macromolecules (Experiments Nr 1-4) and with the increase of the flexibility of the cross-linking (sshivayushchiy) groups (Experiments 4 and 5). Thus the polyester acrylates open production possibilities of polymers with a minimum change in volume as well as with a combination of a high thermal stability, strength, and toughness. They can find a wide range of application. There are 2 figures, 1 table, and 2 Soviet references.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut aviatsionnykh materialov (All-Union Scientific Research Institute of Airplane Material)

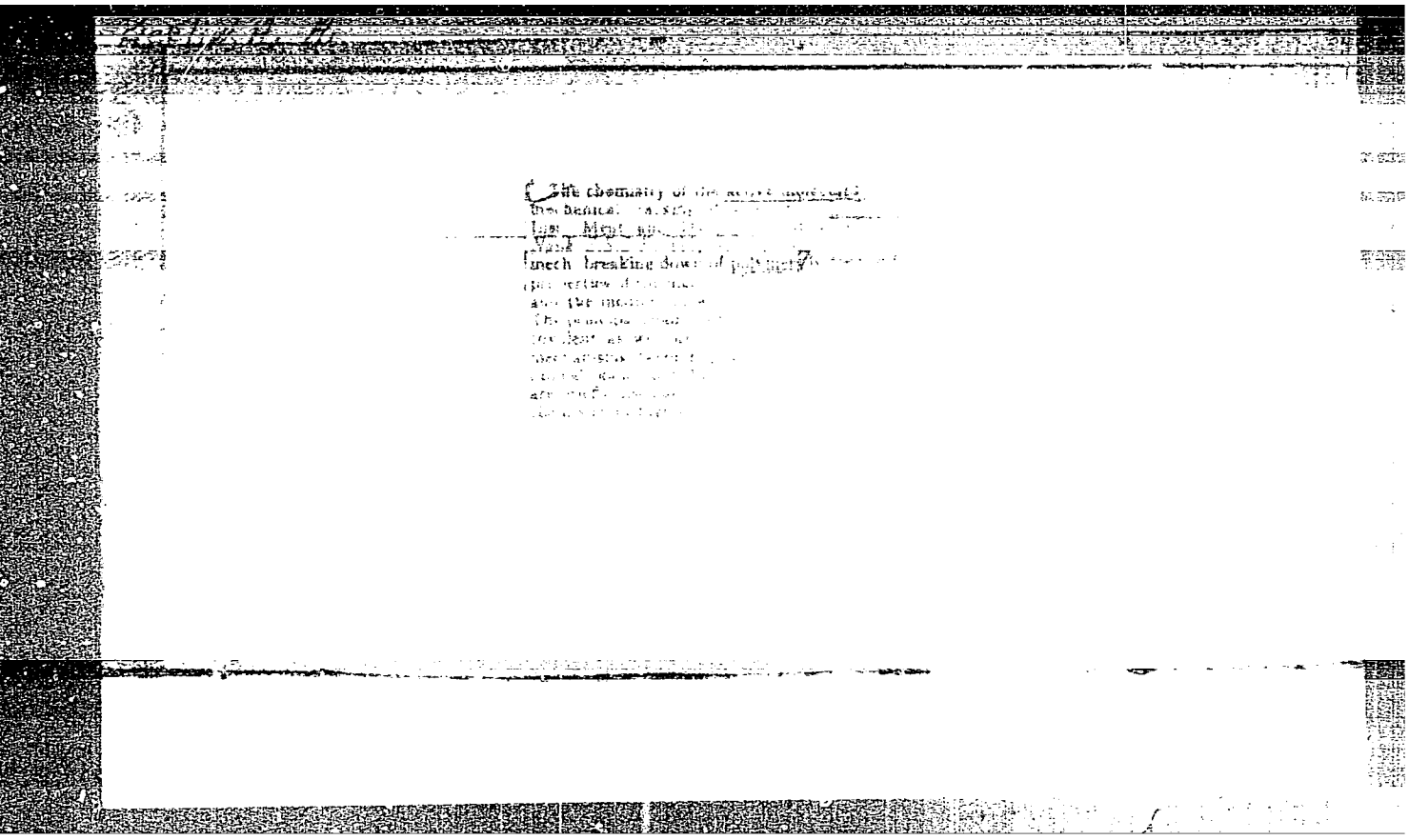
PRESENTED: March 2, 1959 by A. V. Topchiyev, Academician

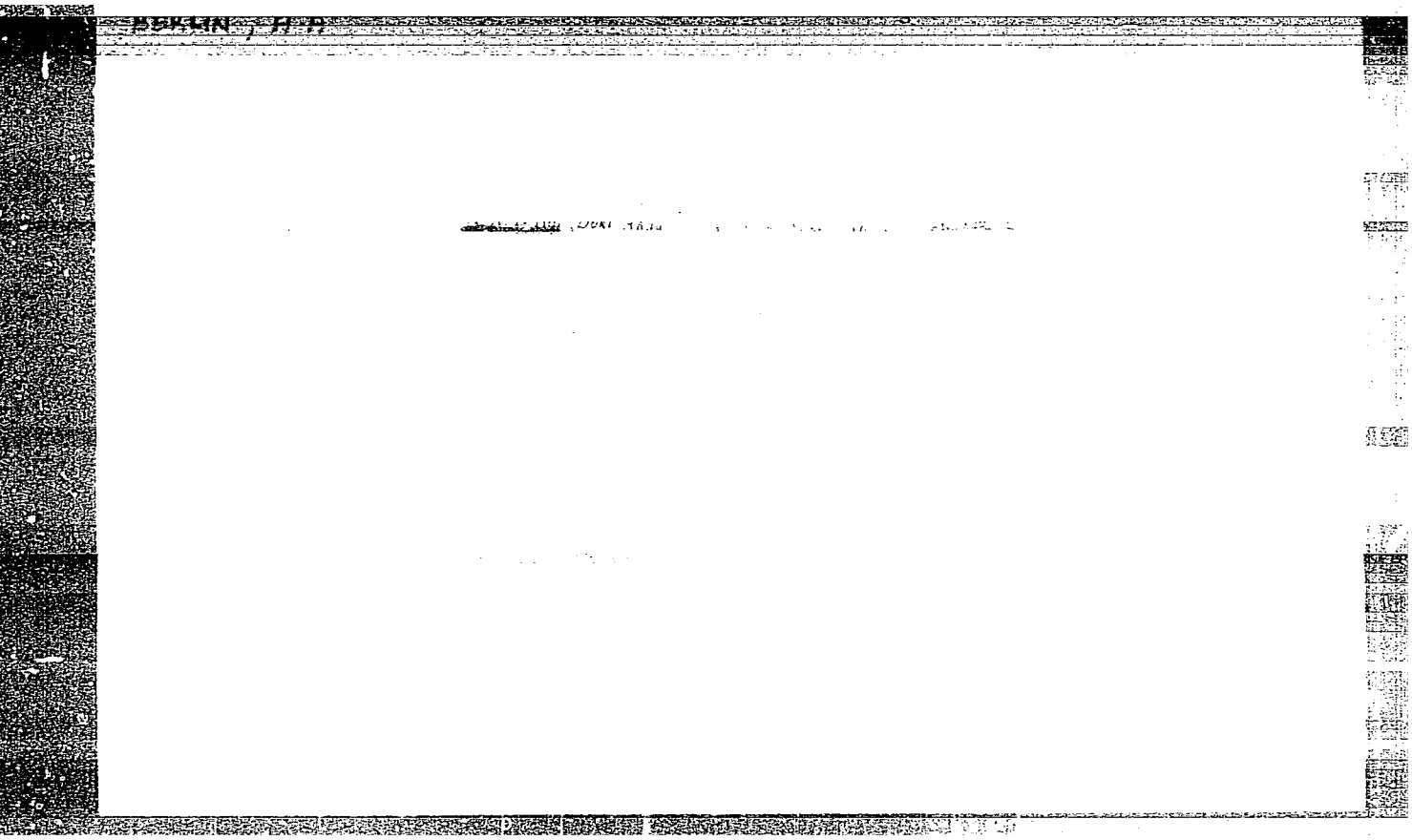
Investigation of the Polymerization and Properties of Mixed Polyethers of the Acryl Series

SOV/20-126-1-22/62

SUBMITTED: June 23, 1958

Card 4/4





SOV-19-58-2-292/551

AUTHORS: Zakharova, M.Z.; Baranovskaya, N.B. and Berlin A.A.

TITLE: A Method of Vulcanizing Silico-Organic Rubbers at Low Temperatures (Sposob vulkanizatsii kremniyorganicheskikh rezin pri nizkikh temperaturakh)

PERIODICAL: Byulleten' izobreteniy, 1958, Nr 2, p 68 (USSR)

ABSTRACT: Class 39b, 6. Nr 110922 (580955 of 23 July 1957). Submitted to the Committee for Inventions and Discoveries at the Council of Ministers of USSR. A method of vulcanizing silico-organic rubbers at low temperature with the use of hardeners in the form of metal-organic compounds and ethers of ortho-silisic acid, or products of their partial hydrolysis. The novelty consists in the use of a mixture of tin-organic compounds (specified) for hardeners, to improve the strength and the heat resistance of rubber.

1. Synthetic rubber--Processing 2. Vulcanization--Temperature factors 3. Metalorganic compounds--Applications 4. Acid ethers--Applications

Card 1/1

Berlin, A. A.

5 (1)

SOV/19-59-2-75/600

AUTHORS: Aver'yanov, A. P., Berlin, A. A. Volkov, N. N., Litvinov, N. D., and Rez, I. S.

TITLE: An Apparatus for Conducting Chemical Processes in a Heterogeneous Medium

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 2, p 23 (USSR)

ABSTRACT: Class 12e, 4_{01}, Nr 117519 (363606-P of 29 May 1948)

Submitted to the State Committee of the Council of Ministers of the USSR for the Introduction of Advanced Techniques into the National Economy. An apparatus with a mixing chamber with tangential intakes. The chamber is mounted in the apparatus' housing; different non-mixing reagents are continuously introduced into the chamber by separate channels under necessary pressure.

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15.1125

5(3)

68536

S/019/59/000/20/170/331
D046/D006

AUTHORS: Berlin, A.A., and Barabanova, V.N.

TITLE: A Method of Obtaining Polymerizing Glues

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 2, p 40-41 (USSR)

ABSTRACT: Class 22i, 2. Nr 123273 (366297-P of 28 December 1948). The glues are obtained on a base of polymerizing resins. To obtain compositions gluing at low temperatures, ethylene glycolmonomethacrylate, a catalyst and fillers are added to a solution consisting of a copolymer of acrylic ethers, with esters of allyl alcohol and dibasic acids.

Card 1/1

Berlin, A.A.

15(8)

SOV/19-59-7-192/369

AUTHORS: Parini, V.P. and Berlin, A.A.

TITLE: A Method of Production of Polycyclic Polymers

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 7, p 41 (USSR)

ABSTRACT: Class 39c, 13. Nr 118979 (585928 of 13 November 1957). A method of obtaining the above polymers with the linked bonds of the basic chain, consists in imparting to the polymers an increased thermal stability. For this purpose, the cyclic diazo-compounds, containing not less than two diazo-groups in a molecule are to be disintegrated with the separation of nitrogen.

Card 1/1

Berlin, A.A.

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(24.1800

80359
S/019/59/000/18/102/245
D032/D002

AUTHORS: Rogov, I.A., Surkov, V.D., Berlin, A.A., and Fedorov, N.Ye.

TITLE: A Method of Obtaining High and Superhigh Pressures

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 18, p 27 (USSR)

ABSTRACT: Class 21g, 35. Nr 122557 (602574/24 of 25 June 1958). Dependent on the Author's Certificate Nr 105011. A method of obtaining high and superhigh pressures by means of an electric pulse discharge in liquid, as per the Author's Certificate Nr 105011, with outer permanent magnetic field used to produce action on the arc forming at the discharge, and to produce a directed shock wave.

Card 1/1

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S/019/59/000/19/150/325
D039/D003

AUTHOR: Berlin, A.A. and Makarova, T.A.

TITLE: A Method of Obtaining Resinous Compounds

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 19, p 39 (USSR)

ABSTRACT: Class 39c, 30. Nr 122875 (423717/23 of 3 April 1950). Submitted to Gostekhnika of the USSR. A method in which an amount of a carboxyl-containing copolymer is mixed with 5-50% of alkylvinyl ester. The carboxyl-containing copolymer is of acryl or metacryl order with acrylic or metacrylic acid.

Card 1/1

Berlin, A.A.

5(3)

S/019/59/000/20/202/331
D046/D006

AUTHORS: Berlin, A.A., Makarova, T.A. and Rodionova, Ye.F.

TITLE: A Method of Obtaining Resin Compounds

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 20, p 49 (USSR)

ABSTRACT. Class 39b, Nr 123311 (425885-П of 9 August 1950). The above compounds for protective coatings are obtained by combination of polycondensation products containing methylol with derivatives of methacrylic acid. The method entails a combination of the methylol group of polycondensates of melamine or phenol with formaldehyde, with a copolymer of butylmethacrylate (95%) and methacrylic acid (5%).

Card 1/1

5(3)

S/019/59/000/20/203/331
D046/D006

AUTHOR: Berlin, A.A. and Makarova, T.A.

TITLE: A Method of Obtaining Thermoreactive Polymers

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 20, p 49 (USSR)

ABSTRACT: Class 39c, 25_{01}. Nr 123312 (363017/23 of 29 April 1958). 1. A polymer or copolymer containing double bonds and carboxylic groups (or without the latter) is mixed with 1 to 10% of non-volatile polyfunctional polymer, 1 to 3% of benzoyl peroxide and used in the form of a 30 to 60% varnish. 2. To obtain transparent or non-transparent plastics, the mixture is prepared in the form of a paste, containing 100 to 300% of non-volatile polyfunctional monomer and 1 to 5 % of benzoyl peroxide.

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Berlin, A.A.

15(8)

S/019/59/000/21/208/362
D037/D006

AUTHORS: Berlin, A.A., Rodionova, Ye.F.

TITLE: A Method of Obtaining Monometacrylates and Monoacrylates of Glycols

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 21, pp 46-47 (USSR)

ABSTRACT: Class 39e, 30. Nr 123697 (424559/23 of 17 May 1950). Submitted to Gostekhnika of the USSR. To simplify the technological process, metacrylic or acrylic acid is taken. The corresponding chlorohydrin and cuprous chloride is heated up to 80°. Two thirds of the required amount of calcined soda is mixed in and the temperature raised to 110 - 150°. The remaining calcined soda is then gradually added and the mass heated at 110 - 150° for 6 or 7 hours. After cooling and filtering the resultant ester is distilled in a vacuum.

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45178
S/882/62/000/002/020/100
A057/A126

5.3750
15,2660

AUTHORS: Berlin, A.A., Kostroma, T.V.

TITLE: A method for the preparation of ferrocene derivatives

SOURCE: Sbornik izobreteniy; plastmassy i sinteticheskiye smoly. no. 2. Kom. po delam izobr. i otkrytiy. Moscow, TsBTI, 1962, 14 [Author's certificate no. 129018, cl. 39c, 30 (appl. no. 626290 of April 25, 1959)]

TEXT: By the present method ferrocene derivatives can be prepared, which can form polymer chelate compounds. Ferrocene is treated in an acid medium at room temperature with diazotization products of aminosalicylic acid or aminosalicylic aldehyde and, subsequently, the obtained products are treated with metal salts. After thermal treatment at 120 - 150°C the obtained polymer chelate compounds acquire the properties of ferromagnetic bodies. 18.8 g ferrocene is dissolved in 60 ml concentrated sulfuric acid. The formed salt solution is poured into ice water and at 0 - 4°C the solution of a diazo-compound is added obtained from 30.8 g p-aminosalicylic acid. The reaction mass is mixed for 1.5 - 2 h,

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A method for the preparation of ferrocene ....

held until separation of a precipitate which is filtered off, washed with water and dried. The obtained product is a mixture with a different degree of substitution of ferrocene from 1 to 5 - 6. Mono-, di- and trisalicylferrocenes are separated by extraction with benzene. The residue is a mixture of tetrasalicylferrocene with an admixture of pentasubstituted ferrocene. The yield of the tetrasubstituted product is 75%. By mixing 4 g tetrasalicylferrocene dissolved in dioxane with a methanol solution of 2 g, copper acetate precipitates the polymer complex. The reaction is completed by boiling the solution for 30 min and the precipitate is filtered off, washed and dried. The polymer chelate compound is a dark-brown powder, non-fusible and insoluble in organic solvents. The yield is 3.9 g. The patent was forwarded to the Goskomitet SM SSSR po khimii (Goskomitet CM USSR for Chemistry) for approval.

[Abstracter's note: Complete translation]

Berlin, A.A.

5(1), 25(1)

S/019/60/000/01/165/267
D033/D006

AUTHORS: Khomyakova, S.K., and Berlin, A.A.

TITLE: A Method of Obtaining a Soluble β-Copolymer

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 1, p 35 (USSR)

ABSTRACT: Class 39b, 4_{02}. Nr 125376 (420628/23 of 12 November 1949). Dependent on Author's Certificate Nr 70763. This β-copolymer is based on ethers of the acrylic or methacrylic series with tetra- or polyfunctional monomers of allyl or vinyl derivatives. The distinctive feature of this method is the use of azo-dinitryl of diisobutyric acid as the initiator and regulator of polymerization.

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Berlin, A.A.

25(1)

S/019/60/000/02/137/221
D031/D005

AUTHORS: Kronman, A.G., Kargin, V.A., Berlin, A.A., Shevlyakov, A.S. and Yanovskiy, D.M.

TITLE: A Method of Obtaining Plastic Materials 15

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 2, p 34 (USSR)

ABSTRACT: Class 39b, 11_{01}. Nr 125675 (629111/23 of 23 May 1959). This method is based on polyvinyl chloride; to increase the specific impact resistance of the plastic material, the polyvinyl chloride is combined with caoutchouc containing pyridine groups.

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5(1)

S/019/60/000/04/051/315
D038/D006

AUTHORS: Baranovskaya, N.B., Berlin, A.A., Zakharova, M.Z., Mizikin, A.I. and Zil'berman, Ye.N.

TITLE: A Method of Solidifying a Composition on the Basis of Silico-organic Polymers

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 4, p 15 (USSR)

ABSTRACT: Class 12o, 2603. Nr 126115 (571577/23 of 20 April 1957). To obtain solidified compositions organic stannic compounds are usud, lowering the vulcanization temperature when mixed with ethyl ether of orthosilicic acid or with the products of its hydrolysis.

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5(1)
25(1

S/019/60/000/05/174/350
D003/D006

AUTHOR: Berlin, A.A., Matveyeva, N.G., Sherle, A.I.

TITLE: Method of Obtaining Chelate Polymer Compounds

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 5, p 38 (USSR)

ABSTRACT: Class 39c, 30. Nr 126612 (624738/23 of 7 Apr 1959). 1) Method of obtaining chelate polymer compounds based on products of reaction between compounds containing chelate forming groups treated by metals or chemical metal compounds. Use of tetra-cyan ethylene or in mixture with polynitryls for the chelate forming compound, the polynitryls containing not fewer than two nitryl groups of adjoining carbon atoms. 2) Obtaining polychelate film on metal surface by treating metal with tetra-cyan

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S/019/60/000/05/174/350
D003/D006

Method of Obtaining Chelate Polymer Compounds

ethylene vapors. 3) Manufacture of plastics by pressing a mixture of tetra-cyan ethylene with finely-dispersed metal at raised temperature. /A

Card 2/2

83098
S/019/60/000/011/041/086
A151/A029

5.3700

AUTHORS: Berlin, A.A., and Kostroma, T.V.

TITLE: A Method for Obtaining Ferrocene Derivatives

PERIODICAL: Byulleten' izobreteniy, 1960, No. 11, p. 43

TEXT: Class 39c, 30. No. 129018 (626290/23 of April 25, 1959). A method for obtaining ferrocene derivatives. It has the following special features: in order to impart to the derivatives an ability to form polymeric chelate compounds, ferrocene is at first treated at room temperature in an acid medium with products obtained from diazotizing aminosalicylic acid or with those from diazotizing aminosalicylic aldehyde, whereupon the obtained products are subjected to interaction with metal salts.

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IT.8102 only 2109,2209

S/019/60/000/012/050/097
A152/A029

AUTHORS: Berlin, A. A., Cherkashin, M. I., Sel'skaya, O. G., Limanov, V. Ye.

TITLE: A Method of Obtaining Polymers

PERIODICAL: Byulleten' izobreteniy, 1960, No. 12, p. 39

TEXT: Class 39b, 4$_{01}$. No. 129330 (626175/23, April 21, 1959). This method is for obtaining polymers on a base of arylacetylenes, and has the following special feature: to increase the thermal stability of the polymers and give them electrically conductive properties, the polymers of the arylacetylenes or their copolymers with aromatic compounds containing two acetylene groups are subjected to additional polymerization at a temperature of 300 - 400°C.

Card 1/1

83961

S/019/60/000/012/049/097
A152/A029

15.1120 only 2109, 2209

AUTHORS: Berlin, A. A., Solov'yeva, V. N. Khomyakova, S. K.

TITLE: A Method of Obtaining Polymerization Glues

PERIODICAL: Byulleten' izobreteniy, 1960, No. 12, p. 39

TEXT: Class 39b, 4_{01}. No. 129329 (420630, September 12, 1959). Dependent on Author's Certificate No. 123273. This method is for obtaining polymerization glues based on polymerization resins according to Author's Certificate No. 123273, and has the following special feature: to improve the mechanical strength of the gluing and increase the thermal stability of the glues, from 10 to 60 % of methacrylic acid anhydride and 10 to 50 % methylmethacrylate is added to the β-copolymer solution. 2) A method as specified in the preceding point, with the following special feature: linear polymers of the vinyl or methacrylic series (polyvinyl acetate and its derivatives, polybutyl methacrylate, Butvar etc.) in a mixture with methylmethacrylate or without the latter, are used in place of a β-copolymer solution.

Card 1/1

85280

15.8000 2109, 2209, 1526, 1460 S/019/60/000/016/067/134
11.2231 A152/A029

AUTHORS: Berlin, A.A.; Popova, Z.V.; Yanovskiy, D.M.

TITLE: A Method of Increasing the Thermal Stability and Photostability of Halide-Containing Polymers and Copolymers

PERIODICAL: Byulleten' izobreteniy, 1960, No. 16, p 43

TEXT: Class 39b, 22_{06}. No. 131085 (641869/23 of October 22, 1959). This method of increasing the thermal stability and photostability of halide-containing polymers and copolymers with the use of stabilizers is distinguished by the following special feature: the stabilizers used are polyvinylenes, obtained by polymerization of alkyl- or arylacetylene or destruction of polymer compounds, e.g., polyvinyl chloride, polyvinyl alcohol or polyacrylonitrile.

Card 1/1

S/019/60/000/020/079/211
A154/0A26

AUTHORS: Raskin, Ya.L., Belyayeva, K.P., Berlin, A.A., Bogatyrev, P.M., Popova, G.L., Shmayn, L.D., Erman, V.Yu.

TITLE: A Method of Obtaining Color-Varnishing Materials

PERIODICAL: Byulleten' izobreteniy, 1960, No. 20, p. 35

TEXT: Class 22h, 1_{02}. No. 132745 (649549/23 of Jan 6, 1960). This method of obtaining color-varnishing materials polymerizing in a film and with a base of unsaturated poly ester compounds, alkide resins, nitrocellulose, siccatives, peroxide catalysts, pigments and solvents is distinguished by the fact that, in order to increase the stability of the varnish system and widen the raw-material base, poly ester acrylates, for example tetramethycrylatediglycerinphthalate, tetramethacrylatediglycerinadipinate (adipinat) or tetramethacrylatediglycerinsebacinate (sebatsinat), are unsaturated compounds.

Card 1/1

BLYUMENFEL'D, L.A.; BERLIN, A.A.; SLINKIN, A.A.; KALMANSON, A.E.

New magnetic properties of macromolecular compounds having conjugated double bonds. Zhur. strukt. khim. 1 no.1:103-108 My-Je '60. (MIRA 13:8)

1. Institut khimicheskoy fiziki AN SSSR.
(Macromolecular compounds--Magnetic properties)

S/064/60/000/02/03/025
B022/B005

AUTHOR: Berlin, A. A.

TITLE: Synthesis and Some Properties of Polyester Acrylates

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 2, pp. 102 - 108

TEXT: The development of new synthetic materials for the construction of modern aircraft and ships, structural engineering and radiolocation, demand the use of light and sturdy building materials resistant under operating conditions and easily workable into large-size products of any desired shape. The viscous "oligomers" developed for this purpose are primarily used for the production of reinforced synthetics. The influence of the monomeric structure on three-dimensional polymerization in the condensed phase and solutions is investigated. To clarify this problem, various types of dimethacryl-, diallyl-, and mixed allyl methacryl esters of the glycols with different structures and degrees of polarization of the unsaturated groups, and with different distances between these groups, were investigated. Fig. 1 shows the polymerization rate of the dimethyl acrylic esters of the glycols, Fig. 2 that of the methacryl carboxy allyl esters

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of ethylene glycol, diethylene glycol, and triethylene glycol. Table 1 shows the most important physicochemical constants of some dimethacryl-, carboxy allyl-, and allyl methacryl esters of the glycols. Fig. 3 shows the polymerization rates of some tetrafunctional monomers, Fig. 4 a comparison of polymerization rates of methacryl carboxy allyl esters of ethylene glycol, diethylene glycol, and triethylene glycol in methanol, and Fig. 5 the polymeric yield in the polymerization of ethylene glycol methacrylate in methanol. The synthesis, and the most important properties, of polyester acrylates are dealt with next. Table 2 shows the most important chemical constants and properties of polyester acrylates on the basis of diethylene glycol, phthalic and methacrylic acid, and Table 3 the hardening rates of polyester acrylates with different polymerization degrees (in polymerization at 100° in the presence of 1% of benzoyl peroxide). Further, the physicomechanical properties of the three-dimensional polymeric polyester acrylates (Table 4), the strength of glued joints when using a glue on polyester acrylate basis (Table 5), and the most important physicomechanical properties of glass textolite of various types on the basis of a polyester acrylate binder at normal and increased temperature (according to data by Ya. D. Avrasin) (Table 6),

Synthesis and Some Properties of Polyester Acrylates

S/064/60/000/02/03/025
B022/B005

are indicated. G. L. Popova, T. Ya. Kefeli, and Yu. M. Filippovskaya are also mentioned. There are 5 figures, 6 tables, and 11 Soviet references.

Card 3/3

S/629/60/000/003/001/011
D202/D305

AUTHOR: Berlin, A. A.

TITLE: Polymers of chelated compounds

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo imeni D. I. Mendeleyeva. Uspekhi khimii i tekhnologii polimerov, sb. 3, Moscow, Goskhimizdat, 1960, 3-13

TEXT: A review of Western investigations in the field of new polymers from chelate compounds. The author refers either directly to Western publications, or to such Soviet ones which contain information taken from Western scientific literature. There are 20 references: 6 Soviet-bloc and 14 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: C. S. Marvel and N. Tarkoy, J. Am. Chem. Soc., 80, 832-833 (1958); T. S. Piper, J. Am. Chem. Soc., 80, 30, (1958); C. S. Marvel and M. H. Martin, J. Am. Chem. Soc., 80, 619-622, (1958); C. S. Marvel and I. H. Rassweiler, J. Am. Chem. Soc., 80, 1197-1199, (1958).

Card 1/1

RASKIN, Ya.L.; LIVSHITS, R.M.; BERLIN, A.A.

Preparation of graft copolymers based on nitrocellulose and study of their film-forming capacity. Report No.1. Lakokras.mat. i ikh prim. no.4: 6-10 '60. (MIRA 13:10)
(Polymers) (Nitrocellulose) (Protective coatings)

83504

S/064/60/000/005/004/009
B015/B058

11.2210 also 2109,2209

AUTHOR: Berlin, A. A.

TITLE: Synthesis and Properties of Polymers With a System of Conjugated Bonds

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 5, pp. 23 - 30

TEXT: Owing to the development of electronics and jet engineering, there is an increasing demand for polymers with high heat resistance, electric conductivity, resistivity against ionizing radiation and various other special properties. Polymers with a system of conjugated bonds (with or without heteratoms), and the synthesis of such polymers are discussed in the present paper because of their special properties. It is pointed out that it is of importance for the synthesis of heat-resistant polymers to obtain structures with relatively high Δw value (such as chain-type polyphenylenes or polyaryl vinylenes) or substances with low Δw value, which can, however, not form hydroperoxide compounds (Δw = energy difference between the upper and lower level of free electrons). These substances can be considered to be semiconductors

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Synthesis and Properties of Polymers With a System of Conjugated Bonds

S/064/60/000/005/004/009
B015/B058

(Table 1), since there are many centers with reduced electron density in conjugated systems. The mechanism of the electrical conductivity of polynuclear aromatic hydrocarbons can be explained by a tunneling effect. The fact that the formation of centers with reduced electron density is possible at a high degree of conjugation, accounts for the specific magnetic properties of the substances discussed. Subsequent to the theoretical explanations, polymers with acyclic system of conjugated bonds in the main chain are discussed, as well as their synthesis, especially concerning the products of thermal and catalytic polymerization of phenyl acetylene (Table 2), and some specific properties are pointed out. There are 5 figures, 2 tables, and 40 references: 20 Soviet, 6 US, 7 British, 6 German, 1 Italian, and 1 Japanese.

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BERLIN, A.A.

Synthesis and properties of polymers containing a system of conjugate bonds. Khim.prom. no.5:375-382 Jl-Ag '60.
(MIRA 13:9)

(Polymers)

BELYAYEVA, K.P.; RASKIN, Ya.L.; BERLIN, A.A.

Polyester acrylates as film-forming materials. Report No. 1: Polyester acrylates as film-forming materials in lacquers for wood finishing. Lakokras. mat. i ikh prim. no. 6:5-11 '60. (MIRA 13:12)

(Acrylic acid) (Lacquers and lacquering)