ACCESSION NR: AP4035097 S/0191/64/000/005/0004/0007

AUTHORS: Berlin, A. A.; Prosvirkina, V. F.

TITLE: Investigations in the area of the mechano-chemistry of polymers

SOURCE: Plasticheskiye massy*, no. 5, 1964, 4-7

TOPIC TAGS: polyvinylchloride, mechanical chemical property, molecular weight distribution, suspension polymer, emulsion polymer, milling, plasticization, mechanical destruction, differential molecular weight distribution, benzoyl peroxide initiator, isobutyroazodinitrile initiator, differential viscosity

ABSTRACT: The molecular weight distribution of suspension and emulsion polyvinyl chloride polymerized with different initiators, and the change in the molecular weight distribution upon milling were investigated to determine the relationship between the molecular weight distribution of PVC produced under different conditions and its mechanical destruction during processing. From differential molecular weight distribution curves it was determined

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ACCESSION NR: AP4035097

that the most defined and highest molecular weight fraction was obtained by suspension polymerization with benzoyl peroxide (brand PB); suspension polymerization with the azodinitrile of isobutyric acid (brand PF polymer) gave somewhat broader molecular weight distribution with a greater low molecular fraction. PB-1 and PF-1 grades of polymer were more uniform in molecular composition and contained less low molecular polymer than the PB-4 and PF-4 brands. The emulsion polymer with hydrogen peroxide initiator (brand M) contained more low molecular material and had a less defined maximum than the suspension polymers. By comparing the differential viscosity of the polymers before and after milling, the greatest change in molecular weight, i.e., the greatest mechanical destruction, was found in the PB polymer and the least in the M polymer, even though the average molecular weight was close. Thus polymerization conditions and nature of the initiator as well as fractional composition determine the weak spots in the polymer which are vulnerable to mechanical action. The average molecular weight was lowered (due to predominant rupture of the longest molecules) and the physical heterogeneity was reduced on milling. The relative viscosity changes increased gradually on milling in

ACCESSION NR: AP4035097

going to the higher molecular weight fractions. No relationship was found between the changes in the Khaggins constant for the initial and the milled polymers; K' changed insignificantly on milling and its value was generally higher for the higher molecular weight fractions. Orig. art. has: 4 figures and 4 tables

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: OC, MT

NR REF SOV: 006

OTHER: 005

Card 3/3

ACCESSION NR: AP4037243 S/0062/64/000/005/0909/0912

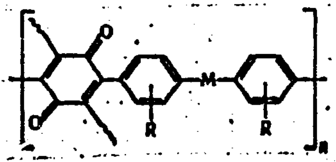
AUTHOR: Dulov, A. A.; Liogon'kiy, B. I.; Ragimov, A. V.; Slinkin, A. A.; Berlin, A. A.

TITLE: Electrical and magnetic properties of polyarylenequinones

SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 5, 1964, 909-912

TOPIC TAGS: organic semiconductor, semiconducting polymer, polyarylenequinone

ABSTRACT: A study has been made of the electrical and paramagnetic properties of polyarylenequinones (I) with the general formula



and x-ray diffraction patterns have been recorded. Polymers I

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ACCESSION NR: AP4037243

were synthesized from the quinone and the bisdiazotized diamines. Their structure was linear or three-dimensional depending on the reactant ratio (1/1 or 1/3; or 1/1 and cross linked with benzidine). The temperature dependence of d-c electrical conductivity for pellet samples of I was determined in the range 100—350C at 10^{-5} mm Hg. A correlation was found between molecular structure, packing density, and electrical properties. Reduction of the backbone quinone radicals to the stable semiquinone form resulted in a sharp rise in conductivity (the change in activation energy remained small). This is believed to confirm the participation of unpaired electrons in the conduction process. This research was conducted at the Institute of Chemical Physics, Academy of Sciences SSSR, and the Institute of Organic Chemistry imeni N. D. Felinskiy, Academy of Sciences SSSR. Orig. art. has: 1 formula, 2 figures, and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR); Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry, Academy of Sciences SSSR)

ACCESSION NR: AP4041172 S/0062/64/000/006/1132/1132

AUTHOR: Sherle, A. I.; Aseyev, Yu. G.; Frankovich, Ye. L.; Berlin, A. A.; Kasatochkin, V. I.

TITLE: Formation of a tetracyanoethylene chelate polymer

SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 6, 1964, 1132

TOPIC TAGS: tetracyanoethylene, organic semiconductor, semiconducting polymer, chelate polymer, copper tetraacetylenide

ABSTRACT: Copper tetraacetylenide (I) has been prepared, identified, and its semiconducting properties studied. Salt I was obtained in acetonitrile and with lower yield in nitrobenzene. Identification was made by elemental analysis and UV and IR spectroscopy. At below 100C, electrical conductivity (σ) in vacuum was described by

$$\sigma = 10^{-0.6} \exp(-5670/RT), \; \sigma_{300k} = 10^{-4.7} \text{ ohm}^{-1} \text{ cm}^{-1}.$$

At higher temperatures σ drops irreversibly and after heating to 150C becomes $\sigma = 10^{0.8} \exp(11900/RT)$, $\sigma_{300k} = 10^{-7.8}$ ohm^{-1} cm^{-1}.

Cord 1/2

ACCESSION NR: AP4041172

If I is heated in the presence of tetracyanoethylene a new compound (II) is formed which unlike I is insoluble in acetonitrile and tetrahydrofuron. Compound II is highly soluble in H_2SO_4 and can be precipitated from it with water. IR spectroscopy suggests that II is a chelate polymer. The work was carried out at the Institute of Chemical Physics of the Academy of Sciences USSR.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 24Mar64 ENCL: 00

SUB CODE: OC, SS NO REF SOV: 001 OTHER: 001

ATD PRESS: 3043

Card 2/2

L 13569-66 EWT(m)/EWP(j)/T/ETC(m) WW/RM

ACC NR: AR5011413

UR/0081/65/000/006/S038/S038

SOURCE: Ref. zh. Khimiya, Abs. 6S255

AUTHOR: Berlin, A.A.; Samarin, Ye.F.; Sumin, I.G.; Kozlova, T.S.

31
B

TITLE: Investigation in the field of polymerizable oligomeres. Synthesis and some properties of polyesteracrylates on pentaerythrite base

CITED SOURCE: Tr. po khimii i khim. tekhnol. Gor'kiy, vyp. 1(9), 1964, 105-107

TOPIC TAGS: chemical reaction, polymerization, catalysis

TRANSLATION: The condensation telomerization of pentaerythrite and the following dicarboxylic acids: sebacic, adipic, and phtalic with an addition of methacrylic acid in a ratio of pentaerythrite to the acids 1:2:6.6 in the presence of 5% of dil. (1:10) H_2SO_4 as catalyst; or using n-toluenesulfonic acid in a toluene, or benzene medium under continuous azeotropic distillation of the reaction water was carried out. Polyesteracrylates are a mixture of oligomeres with a degree of polycondensation n=2. At n=1 the ester number and the bromide number were determined. The MR_D was found. The polyesteracrylate was polymerized with 0.5% of benzoyl peroxide at 70° and 120° for 5 hrs. The physical-mechanical properties of polymers, such as hardness (Brinell), static bending strength and the weight loss at 240° in N_2 atmosphere were determined. N. Nikolaenko

SUB CODE: 07

Card 1/1

BERLIN, A.A.; VONSYATSKIY, V.A.; LYUBCHENKO, L.S.

Electron paramagnetic resonance spectra (EPR) of some polynuclear aromatic hydrocarbons. Izv. AN SSSR Ser. khim. no.7:1184-1188 Jl '64. (MIRA 17:8)

1. Institut khimicheskoy fiziki AN SSSR.

KOROLEV, G.V.; SMIRNOV, B.R.; BASHKIROVA, S.G.; BERLIN, A.A.

Polymerization in highly viscous media and three-dimensional polymerization. Part 8: Determination of the rate constants of initiation of radical polymerization by means of some peroxide and azo initiators in an incompletely set dimethacrylate butylene glycol. Vysokom. soed. 6 no.7:1256-1260 Jl '64 (MIRA 18:2)

1. Institut khimicheskoy fiziki AN SSSR.

L 9779-65 EWT(l)/EPA(s)-2/EWG(k)/EWT(m)/EPF(c)/EWP(j)/T/EWA(b) Pc-4/Pt-10/Pz-6/Pr-4 IJP(c)/AFWL/[illegible]

SOURCE: AN SSSR. Izv. Seriya khimicheskaya, no. 9, 1964, 1720-1721

[illegible] state, catalyst [illegible]

ABSTRACT: On the basis of data obtained previously by various researchers on the catalytic properties of [illegible]

[illegible] biochemical processes [illegible]

L 8776-65
ACCESSION NR: AP4045803

[illegible] sture are of [illegible]

[illegible]
[illegible] Chemical Physics [illegible]

SUBMITTED: 06Feb64 ATD PRESS: 3111 ENCL: 00

SUB CODE: GP, MT NO REF SOV: [illegible]

L 17849-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP4047410 [illegible]

AUTHOR: Bass, [illegible]; Berlin, A. A.

TITLE: [illegible] on effect in the inhibition [illegible]
[illegible] with a conjugated system [illegible]

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. [illegible]

TOPIC TAGS: oxidation, thermal oxidation, oxidation inhi[illegible]
[illegible]

[illegible] present st[illegible]

Card 1/2

L 17849-65

ACCESSION NR: AP4047410

ASSOCIATION: Institute Khimicheskoy fiziki Akademii [illegible]

[illegible] (Institute of Fine Chemical [illegible]

NO REF SOV: 001 OTHER: 001

Card 2/2

L 14505-65 EWT(m)/EPF(c)/EPR/EWT(j)/T Pc-4/Pr-4/Ps-4

ACCESSION NR: AP[illegible]

AUTHOR: Berlin, A. A., Sel'skaya, O. G.

[illegible]

SOURCE: Plasticheskiye massy*, no. 11, 1964, 10-12

TOPIC TAGS: diethylene glycol, butylene glycol, phthalic acid, sebacic acid, polymer rigidity, polyacrylic ester, acrylate

ABSTRACT: The hardened products of the following oligomers w[illegible] [illegible] with the [illegible]

[illegible] per hour using a die 4 mm in diameter; the specific pressure was [illegible] kg/cm^2 The hardened samples of esterified polyacrylic [illegible]

[illegible]

[illegible] properties and the different degrees of polymerization was plotted. Samples with a degree of conversion close to 100% were then

Card 1/2

L 14505-65

ACCESSION NR: AP4048200

studied to determine the effect of the nature of the ester block at [illegible]

[illegible] decrease and the segmental mobility [illegible]

work. In a denser structure, such as MDF, greater loads are needed to produce destruction. "Thanks are due to Yu. M. Sivergin for supplying the polymer samples." [illegible] figures and 4 structural formulas

[illegible]

[illegible] ENCL: 00

NO REF SOV: 000 2/2 OTHER: 000

L 22130-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM

AUTHOR Berlin A A Aseyeva R M Smutkina Z S K[illegible] V [illegible]

[illegible] of [illegible]

[illegible] SSSR [illegible]

[illegible] chain dissociation activation energy polyv[illegible]

ABSTRACT The work deals with results of a study of the kinetics of [illegible]

L 22439-65
ACCESSION NR: AP5000483

[illegible] of C–C bond rupture. This affords the assumption of a chain [illegible] or

5 figures and 1 table

Card 2/2

BERLIN, A.A.; PARINI, V.P.; FRANKEVICH, Ye.L.; CHERKASHINA, L.G.

Local activation effect during the reaction between tetracyanobenzene and some aromatic hydrocarbons. Izv. AN SSSR Ser. khim. no.11:2108-2110 N '64 (MIRA 18:1)

1. Institut khimicheskoy fiziki AN SSSR.

L 18004-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL RM/WW

[illegible]

AUTHOR: [illegible] A. A.; Kefeli, T. Ya.; Sivergin, Y. M.; Filippovska [illegible]

[illegible]

SOURCE: [illegible] massy, no. 12, 1964, [illegible]

TOPIC TAGS: polyacrylic resin, polyester acrylate, cured poly [illegible]

[illegible]

coefficient [illegible] polymerization [illegible]
radical initiator, the solids obtained showed a monotonous decrease [illegible]

[illegible]

[illegible] molecular weight [illegible]

[illegible] condensation from phthalic anhydride, diethylene [illegible]

Card 1/2

L 19004-65

ACCESSION NR: AP5000745

the coefficient of polymerization, and the mechanical strength of the copolymers was slightly [illegible] of the [illegible]

increase in crosslinking, while the lower strength at a coefficient of [illegible] is ascribed to structural stress and decrease in orientation capability. Swelling [illegible]

[illegible]

[illegible] NBMH [illegible]

NO REF SOV: [illegible] OTHER: [illegible]

Card 2/2

L 19037-65 EWT(m)/EWP(j) Pc-4/Pa-4 AEDC(a)/ASD(p)-3/SSD RM

ACCESSION NR: AP5000027 S/0286/64/000/021/0042/0042

AUTHOR: Bass, S. I.; Berlin, A. A.; Levantovskaya, I. I.; Kovarskaya, B. M.; Novoselova, I. A.

TITLE: Heat stabilizer 15 for poly(ethylene terephthalate) 7. Class 39, No. 166126

SOURCE: Byul. izobr. i tovar. znakov, no. 21, 1964, 42

TOPIC TAGS: poly(ethylene terephthalate), thermal stabilizer, anthracene

ABSTRACT: An Author Certificate has been issued for the use of products of the heat treatment of polynuclear aromatic [illegible], e.g., anthracene containing 10^{14}—10^{18} paramagnetic [illegible] gram, as heat stabilizers for poly(ethylene terephthalate).

[illegible]

SUBMITTED: 16Jul63 ENCL: 00 SUB CODE: OC, [illegible]

NO REF SOV: 000 OTHER: 000 ATD PRESS: 31[illegible]

Card 1/1

ACCESSION NR: AP4009148 S/0190/64/006/001/0058/0063

AUTHORS: Berlin, A. A.; Zherebtsova, L. V.; Razvodovskiy, Ye. F.

TITLE: Polymers with conjugated system. 37. Synthesis of polymers with charged heteroatoms in the macromolecular chain (onium polymerization)

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 1, 1964, 58-63

TOPIC TAGS: polymer, polymerization, conjugated system, 4-chloropyridine, 4-bromopyridine, copolymerization, 1,4-dibormobutane, onium polymerization, charged heteratom, polymerization kinetics, stepwise mechanism, ionic state

ABSTRACT: In the so-called "onium" type of polymerization the growth of the chain is said to proceed via the incorporation of heteroatoms as ions of abnormal valency. In the present paper, 4-chloropyridine and 4-bromopyridine were subjected to thermal polymerization in sealed evacuated glass ampules in a temperature range of 0-210C, for a 3-5 hour period. The polymerization of 4-chloropyridine was also conducted in pyridine solution at 100C for 6 hours. Copolymerization of gamma,gamma'-dipridyl with 1,4-dibromobutane was also achieved. The polymers obtained were subjected to chemical analysis, and their molecular weight, electrical conductivity, infrared spectra, and electron paramagnetic resonance data studied. In the opinion of the

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ACCESSION NR: AP4009148

authors the polymerization process presumably proceeded along steps outlined in Fig. 1 of the Enclosure, in a stepwise pattern, through the stage of an ionized complex involving a transfer of charge as well as of the intermediate complex. It was found that polymerization in an aluminum cell proceeded without any induction period and at an accelerated pace as compared with a silicone-coated cell. The addition of 0.5-1.0% KI catalyzed the polymerization of 4-chloropyridine. A maximum molecular weight of 4360 for the 4-chloropyridine polymer was obtained at 165C, while the 4-bromopyridine polymer had a molecular weight of 1920 at 150C. All polymers were soluble in water and hydrochloric acid, while only the ones obtained at 0-50C were soluble in methanol and ethanol. The polymers possessed increased electroconductivity. Spontaneous polymerization in 4-bromopyridine monomers on storage was observed, the polymer being of crystalline structure. Thanks are given to Ye. I. Balabanov for determination of electrical properties of the polymers. Orig. art. has: 1 formula, 2 tables, and 2 charts.

ASSOCIATION: Institut khimicheskoy fiziki, AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 27Jul62 DATE ACQ: 10Feb64 ENCL: 01

SUB CODE: CH NO REF SOV: 005 OTHER: 005

Card 2/2

DUBINSKAYA, A.M.; BUTYAGIN, P. Yu.; BERLIN, A.A.

Some low-temperature reactions of macro radicals in the solid phase. Dokl. AN SSSR 159 no.3:595-598 N '64 (MIRA 18:1)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N. Kondrat'yevym.

ACCESSION NR: AP4037280 S/0190/64/006/005/0832/0837

AUTHOR: Berlin, A. A.; Cherkashina, L. G.; Frankevich, Ye. L.; Balabanov, Ye. M.; Aseyev, Yu. G.

TITLE: Polymers with a conjugated system. I. Synthesis and investigation of the electrophysical properties of polymaric phthalocyanines

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 5, 1964, 832-837

TOPIC TAGS: organic semiconductor, semiconductor polymer, phthalocyanine polymer

ABSTRACT: The effect of oxygen-containing groups and the effect of branching on the electrical properties of phthalocyanine polymers have been studied. This was considered of interest because previously prepared phthalocyanines based on aromatic tetracarboxylic acids

Card 1/3

ACCESSION NR: AP4037280

showed semiconducting and catalytic properties. The polymers in this study were synthesized by reacting 1,2,4,5-tetracyanobenzene (TCB) or TCB and phthalonitrile (PN) with copper powder or Cu_2Cl_2 in the presence of urea at 300C. PN was added to control both the degree of branching and the content of nitrile end groups, which were subsequently converted to oxygen-containing groups by hydrolysis with H_2SO_4. The electrical conductivity at 300K for the TCB polymers was 10^{-5} to 10^{-2} ohm^{-1} cm^{-1} and the activation energy was 6—2 kcal/mol. These figures for phthalocyanine polymers prepared earlier from pyromellitic acid were 10^{-4} ohm^{-1} cm^{-1} and 4.2 kcal/mol. For the polymers from TCB and PN which contain oxygen groups, the conductivity was 10^{-5} ohm^{-1} cm^{-1} and $10^{-2.6}$ ohm^{-1} cm^{-1} for reprecipitated and nonreprecipitated samples, respectively. The thermal stability of the phthalocyanine polymers with oxygen-containing groups was higher than that of the nitrile-group-containing analogs (300—350C versus 250C). This research was done at the Institute of Chemical Physics, Academy of Sciences SSSR. Orig. art. has: 3 figures, 2 tables, and 2 formulas.

ACCESSION NR: AP4037280

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 03Jun63 DATE ACQ: 09Jun64 ENCL: 00

SUB CODE: OC NO REF SOV: 004 OTHER: 003

Card 3/3

[illegible]

TOPIC TAGS: polymerization, organic azo compound, polyester plastic, acrylic plastic, organic oxide

ABSTRACT: The rate constants of initiation and [illegible]

[illegible] the establishment that the initiation rate does not depend on the degree of conversion of the polyester acrylate [illegible] incompletely set polyester acrylate glasses with residual double [illegible] It was found that the activation energies of initiation [illegible] coincide with the activation energies [illegible] initiation were approximately 2.5 times lower than the preexponential factors of decomposition. The efficiency of initiation by peroxide initiators was [illegible] only slightly less than the theoretical [illegible] 10 times lower. Orig. art. has 2 forms., 1 graph and 4 tables.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

ACCESSION NR: AP4045435 S/0190/64/006/009/1684/1687

AUTHOR: Berlin, A.A., Ganina, V.I., Kargin, V.A., Kronman, A.G., Yanovskiy, D.M.

TITLE: Formation of salt groups by the reaction of poly[vinylchloride] with nitrile and methylvinylpyridine rubbers

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 9, 1964, 1684-1687

TOPIC TAGS: poly[vinylchloride], nitrile rubber, methylvinylpyridine rubber, plasticization, polymer infrared spectrum polymer, impact strength, pyridine salt, volume resistivity, grafted copolymer

ABSTRACT: The proposed mechanism of formation of grafted copolymers, their infrared spectra, volume resistivity and some physico-mechanical properties of the products of coplasticization of poly[vinylchloride] (PVC) with nitrile and methylvinylpyridine synthetic rubbers were investigated on 0.08 mm thick films made from a 1:1 mixture of PVC and rubber. Models for the grafted copolymers of PVC with methylvinylpyridine rubbers (MVP) were low-molecular pyridine salts. The absorption spectra of PVC, MVP and their coplasticization products showed that the absorption bands of PVC and rubber appear in the spectrum of the coplasticization product either unchanged or with a slight displacement.

Card 1/3

ACCESSION NR: AP4045435

Some bands characteristic of PVC coalesce with the corresponding MVP bands. There, the width and intensity of the separate bands change. The appearance of new bands for the reaction product at 1628 and 1470 cm^{-1} can be explained by the absorption of the pyridine ion, for which two characteristic bands lie in the regions of 1630-1640 and 1485-1490 cm^{-1}. The low-molecular pyridine salt shows a very sharp peak at 1636 cm^{-1} anc a wide intensive peak with a maximum in the region of 1470-1480 cm^{-1}. It has been confirmed by the spectra that during the coplasticization of PVC and MVP, by the interaction of their functional groups, grafted copolymers having the structure of high-molecular pyridine salts are produced. The volume resistivity data for PVC-MVP and PVC-nitrile grafted copolymers as well as for the coplasticization of PVC with butadiene and butadiene-styrene (SKS-30) rubbers, are tabulated. The volume resistivity decreases considerably if the amount of rubber, containing functional groups which interact with the chlorine atoms of PVC, is increased. This increase in electrical conductivity for PVC compositions with rubber may be due to the formation of an ionic structure in the grafted copolymers or to the accumulation of hydrogen chloride in the system, as a result of the dehydrochlorination of PVC during plasticization. Analysis of aqueous-acetone extracts showed the absence of chlorine and hydrogen atoms in the composition. The

Card 2/3

ACCESSION NR: AP4045435

coplasticization products also have a high impact strength. Compositions of PVC with nonpolar rubbers containing no functional groups able to react with PVC are characterized by a low impact strength and low relative elongation, due to the absence of a chemical bond between PVC and the rubbers, as well as to their incompatibility. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: none

SUBMITTED: 16Nov63 ENCL: 00 SUB CODE: OC, MT

NO REF SOV: 004 OTHER: 004

Card 3/3

S/0190/64/006/009/1688/1692

ACCESSION NR: AP4045436

AUTHOR: Berlin, A.A., Kronman, A.G., Yanovskiy, D.M., Kargin, V.A.

TITLE: Mechanism of the processes occurring in the coplasticization of poly[vinylchloride], nitrogenous rubber, methylvinylpyridine, isoprene, graft polymer, polymer impact strength, hydroquinone

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 9, 1964, 1688-1692

TOPIC TAGS: coplasticization, copolymer, poly[vinylchloride], nitrogenous rubber, methylvinylpyridine, isoprene, graft polymer, polymer impact strength, hydroquinone

ABSTRACT: The properties of grafted copolymers synthesized by the joint plasticization of poly[vinylchloride] (PVC) with nitrile (SKN) and methylvinylpyridine (MVP) rubbers were investigated in order to clarify the molecular and radical mechanisms occurring during the formation of these copolymers. Films 0.4-0.6 mm thick obtained from a 0.5% solution of polymer in cyclohexanone at a PVC: rubber ratio of 9:1 were tested for strength and viscosity. It was found that the maximum tensile strength for films of grafted copolymers is much lower than for films obtained from the corresponding mechanical mixtures. This is due to the loosening of the polymer structure resulting from the grafting process, which leads to the formation of systems characterized by lower density

Card 1/3

ACCESSION NR: AP4045436

and air-filled micropores. Viscosimetric investigations showed that the intrinsic viscosity of mechanical mixtures of PVC with MVP-15, SKN-18, SKN-26 and SKN-40 is intermediate between the viscosities of the initial polymers, but that the viscosity of the corresponding coplasticization product is lower than the viscosity of either initial polymer. However, the viscosity of the coplasticization product of PVC with isoprene rubber (SKI) and that of their mechanical mixture are almost identical and are intermediate between the viscosities of the initial polymers. This is due to the absence of functional groups in isoprene rubber able to react with PVC, which results in a mechanical mixture during their coplasticization. The specific viscosity-concentration curves for a PVC composition containing 10% MVP-15, plasticized for 2.5, 5, 10 and 20 min., show that the viscosity decreases with decreasing reaction time while the Huggens constant increases. During the plasticization of PVC with 10% isoprene rubber, the viscosity remains unchanged with time, but the concentration-viscosity curves for 2.5, 5 and 20 min. almost agree. This confirms the theoretical difference in the processes of plasticization of PVC with rubbers with or without functional groups which can react with it. The effect of the addition of hydroquinone to the mixture on the properties

ACCESSION NR: AP4045436

of the coplasticization product of PVC with rubbers was also studied. Plasticization with 1% hydroquinone, used as an acceptor of free radicals, showed that hydroquinone does not affect the impact strength of the samples and decreases the reduced viscosity of the plasticization products only slightly. Thermal dynamic curves show that hydroquinone by hindering the recombination of radicals and cross-linking, improves the flow properties of the composition slightly. The decrease in temperature promotes the destruction of the macromolecules during mechanical processing. On the basis of the experimental data, it was established that the role of radical processes in the formation of grafted polymers is small. Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: none

SUBMITTED: 16Nov63 ENCL: 00 SUB CODE: OC, MT

NO REF SOV: 006 OTHER: 001

Card 3/3

BASS, S.I.; BERLIN, A.A.

Particular features of the effect of local activation in the inhibition of oxidation processes by compounds with a conjugation system. Izv. AN SSSR. Ser. khim. no.10:1913 O '64.

(MIRA 17:12)

1. Institut khimicheskoy fiziki AN SSSR i Institut tonkoy khimicheskoy tekhnologii im. M.V. Lomonosova.

L 10375-65 EWT(1)/EPA(s)-2/EWG(k)/EWT(m)/EPF(c)/[illegible]
[illegible] ESD(dp)/AFWL/[illegible]

ACCESSION NR: AP4047200 S/0190[illegible]

AUTHOR: Berlin, A. A.; Cherkashin, M. I. [illegible]

[illegible] was made of the [illegible]
[illegible] (PA) in the presence of the [illegible]

[illegible] were formed (paramagnetic [illegible]

[illegible] oligomers [illegible]
[illegible] low-molecular-weight [illegible]

L 10375-65

ACCESSION NR: AP4047200

contained 1,3,5-triphenylbenzene, whereas no noticeable amounts of 1,3,5-derivatives of benzene were produc[illegible]

of atmospheric oxygen up to 300-400C. Neither [illegible] electrophilic addition (bromination), hydrogenat[illegible] formation with maleic anhydride. In [illegible]

[illegible] the presence of 1,4-substituted phenyl [illegible]

ASSOCIATION: Institut khimicheskoy fiziki AN [illegible]

SUB CODE: [illegible] NO REF SOV: [illegible]

L 12423-65 EWT(m)/EPA(s)-2/EPF(c)/T/EWP(j) Pc-4/Pr-4/Pt-10 ASD(a)-5/AFWL/
ESD(dp)/ESD(t) RM

ACCESSION NR: AP4047213 S/0190/64/006/010/1838/1841

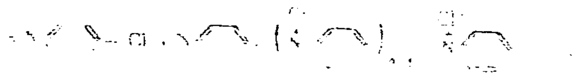
AUTHOR: Berlin, A. A.; Razvodovskiy, Ye. F.; Korolev, G. V.

TITLE: Certain problems of 4-chloropyridine polymer [illegible]

[illegible] lekulyarny*ye soyedineniya, v. [illegible]
[illegible]

TOPIC TAGS: organic semiconductor, semiconducting [illegible] erization, polychloropyridine, polymerization kinetics, polymerization mechanism

ABSTRACT: A study has been made of the kinetics and [illegible] [illegible] merization to a conjugated [illegible]



[illegible]

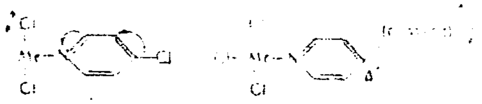
[illegible] the formation mechanism of [illegible]

[illegible]

L 12423-65

ACCESSION NR: AP4047213

$SnCl_2 \cdot 2H_2O$, $CoCl_2 \cdot 6H_2O$, $MnCl_2 \cdot 4H_2O$, $BaCl_2$, Al(NO [illegible] [illegible] and 1,4-dibromobutane, and the [illegible] amines pyridine and 4,4'-bipyridyl [illegible] [illegible] catalyzed the reaction, and the following two step initiation mechanism was proposed:



Ternary amines and water inhibited the reaction, which suggests that propagation occurs via the chlorine atom. The [illegible] [illegible] of the [illegible] [illegible] the so-called local activation effect was suggested. Orig. art. has: 5 figures, 2 tables, and 3 formulas.

Card [illegible]

L 12423-65
ACCESSION NR: AP4047213

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: 12Dec63 ATD PRESS: [illegible]

[illegible] NO REF SOV: [illegible]

L 15173-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10/Pa-4
ASD(a)-5/AFWL/ESD(dp)/ESD(t)/RPL RM/WW

ACCESSION NR: AP4049147 S/0190/64 [illegible]

AUTHOR: Berlin, A. A.; Dubinskaya, A. H.; Moshkov[illegible]

solution [illegible] polyacrylonitrile in dim[illegible] 15

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. [illegible]
1938-1943

[illegible] organic semiconductor, polyacrylonitr[illegible] product, polyacrylonitrile dehydrogena[illegible] [illegible] formide solvent, [illegible]

[illegible] study was conducted to obtain, by hea[illegible] acrylonitrile in dimethylformamide solution, a sol[illegible] product. A similar but insoluble pr[illegible] [illegible] heat treatment [illegible] [illegible] of polyacrylonitrile [illegible] solutions in a current of air [illegible] formed which are completely [illegible] formamide. Infrared, electronic absorption, and [illegible] spectra, together

Card 1/2

L 15173-65
ACCESSION NR: AP4049147

with viscosity measurements, showed that in this [illegible] and oxidative dehydrogenation of polyacrylonitrile [illegible] formation of a conjugated double bond system. [illegible] the [illegible] link formation in the polymer molecules was revealed. Products of the thermal treatment of polyacrylonitrile in dimethylformamide solution withstand heating up to 350—400C without appreciable degradation. Thermomechanical curves of the soluble heat-treated polyacrylonitrile were compared with those of the original polyacrylonitrile. Orig. art. has: 8 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: [illegible]

NO REF SOV: 003 OTHER: 008 [illegible]

Card 2/2

BERLIN, A.A.; ASEYEVA, R.M.; SMUTKINA, Z.S.; KASATOCHKIN, V.I.

Kinetics of thermal degradation of chlorine-containing carbochain polymers. Izv. AN SSSR Ser. khim. no.11:1974-1979 N '64
(MIRA 18:1)

1. Institut khimicheskoy fiziki AN SSSR.

ACCESSION NR: AP4039616 S/0076/64/038/005/1118/1125

AUTHOR: Boguslavskiy, L. I. (Moscow); Sherle, A. I. (Moscow); Berlin, A. A. (Moscow)

TITLE: Study of the electrophysical properties of films of polymeric complexas of metal tetracyanoethylene

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 5, 1964, 1118-1125

TOPIC TAGS: tetracyanoethylene, metal tetracyanoethylene, tetracyanoethylene polymer, organic semiconductor, semiconducting polymer

ABSTRACT: A study has been made of the electrical properties of films of chelate polymers of tetracyanoethylene with various metals. Films 10^{-4}—10^{-5} m thick were prepared by treating strips of Cu, Mg, Fe, Ni, Ag, Pt, Al, or glass with tetracyanoethylene vapors at 150—450C and 10^{-4}—10^{-5} mm Hg. Electrical measurements were carried out in the frequency range 20 cycles/sec—200 kcycles/sec with simultaneous application of d-c voltage. Electrical resistivity and its temperature dependence, activation energy for conduction, and dielectric constant were determined. From changes in these parameters

Card 1/2

ACCESSION NR: AP4039616

processes taking place in the formation and heat treatment of the films were observed. The dependence of resistivity and dielectric constant of the films on frequency and d-c voltage are interpreted in terms of the heterogeneous structure model. It is assumed that resistivity and activation energy are essentially due to activation jumps over barriers between macromolecules. The work was carried out at the Institute of Electrochemistry and the Institute of Chemical Physics of the Academy of Sciences USSR. Orig. art. has: 8 figures, 1 table, and 1 formula.

ASSOCIATION: Institut elektrokhimii Akademii nauk SSSR (Institute of Electrochemistry, Academy of Sciences, SSSR); Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 18Mar63 DATE ACQ: 19Jun64 ENCL: 00

SUB CODE: OC, EC NO REF SOV: 006 OTHER: 002

Card 2/2

L 16067-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(1) Pc-4/
Pr-4/Pel/Pu-4 GG/RM

ACCESSION NR AP4046086 S/0076/64/[illegible]

AUTHOR: Kiseleva, Ye. D.; Ragimov, A. V.; Chinutov, [illegible]; [illegible]
Kliyentovskaya, M. M.; Bryushkova, T. A.

TITLE: Effect of an ionizing radiation current of accelerated [illegible] polysulfophenylenequinone cationites

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 9, 1964, 2316-2319

TOPIC TAGS: polysulfophenylenequinone cationite, ionite P3, [illegible] P4, ionite PS-3, radiation stability, accelerated electron radiation, radiolysis, dry atmosphere radiation, EPR spectrum, double bond oxidation

ABSTRACT: The stability of polysulfophenylenequinone cationites subjected to accelerated electron current radiation in water and in a dry atmosphere was investigated. [illegible] conjugated bond-containing [illegible] [illegible] of benzidinedisulfonic acid-2,2 (II) (I:II=1:3 for ionite P3 and 1:4 for ionite P4) or

Card 1/3

L 16067-65

ACCESSION NR: AP4046086

stilbenedisulfonic acid-2, 2(III) (I:III=1:3 for ionite PS-3). Radiation conditions: electron energy=4.0-4.2 MEV, current strength = 5-10 [illegible] x 10^{19} ev/gm. sec. On irradiation in water the capacity and weight of the cationites was reduced and swelling increased with increasing dosage. Destruction was believed to have been caused by oxidation of the quinone-hydroquinone group in P3 and P4 and oxidation of the double bond in PS-3 by the products of water radiolysis. On irradiation in the absence of water the radiation stability was considerably increased. The increased ion exchange capacity of the irradiated PS-3 cationite was explained due to the formation of carboxyl groups at the site of the double bond [illegible]. The stability [illegible]

ASSOCIATION: Akademiya nauk SSSR. Institut fizicheskoy [illegible]

Card 2/3

L 16067-65

ACCESSION NR: AP4046086

Sciences SSSR Institute of Physical Chemistry)

SUBMITTED: 24Apr64 ENCL: 00

SUB CODE: GC, EM, GP NO REF SOV: 002 OTHER 002

Card 3/3

ACCESSION NR: AP4013331 S/0020/64/154/003/0627/0630

AUTHORS: Berlin, A.A.; Vonsyatskiy, V.A.

TITLE: Induced reactivity of several compounds with conjugated systems on reacting with 1,1-diphenyl-2-picrylhydrazyl

SOURCE: AN SSSR. Doklady*, v. 154, no. 3, 1964, 627-630

TOPIC TAGS: conjugated polymer, paramagnetic polymer, induced reactivity, hydrogen transfer, pi complex, polymer chemistry, polyphenylene, electron paramagnetic resonance, paramagnetic activation, 1,1-diphenyl-2-picrylhydrazyl, paramagnetic induction of reactivity

ABSTRACT: The reaction of 1,1-diphenyl-2-picrylhydrazyl (DFPH) with solutions of paramagnetic polymers containing conjugated bond systems (polyphenylene (PF), polyazophenylene, polymethylpyridylacetylene, polyphenylacetytlene, and heat-treated anthracene) and with anthracene monomer, was studied spectrophotometrically and by the EPR. DFPH is not destroyed in solution with anthracene, which is

Card 1/3

ACCESSION NR: AP4013331

not paramagnetic, but is destroyed on addition of PF; its destruc-
tion increases with temperature and is dependent on the presence of
oxygen. The destruction is associated with the transfer of H from
the conjugated system (not from the solvent) to form 1,1-diphenyl-
2-picrylhydrazine, but not a DPFH-PF compound. The following re-
action mechanism proposed: DFPH dissolves to form solvated com-
plexes, which on addition of PF form a DFPH(PF)solvent pi-complex.
Paramagnetic centers of the PF activate the S-T transition of the
diamagnetic PF macromolecule, making possible the transfer of the H
to the acceptor DFPH. The active PF radical thus formed breaks off
an H (or other atom, e.g. halogen) from the solvent molecule in the
complex, and the remaining solvent radical reacts with a second
molecule of DFPH (or recombines). This mechanism explains the rela-
tively low effective activation energy, the acceleration of the re-
action with increasing conjugated bond polymer concentration, and
the presence of two low molecular end products. This induction of
reactivity by paramagnetic centers of polymers with conjugated bond
systems opens the road to new methods in organic and polymer chemis-

Card 2/3

ACCESSION NR: AP4013331

try. "...ebullioscopic measurements were carried out with V.V. Tartarintsev." Orig. art. has: 4 figures and 4 equations.

ASSOCIATION: Institut khimicheskoy fiziki, Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 07Aug63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: CH NO REF SOV: 008 OTHER: 003

Card 3/3

[illegible]

ACCESSION NR. AP4012978 S/0020/64/[illegible]

AUTHOR: Slonim, I. Ya., Urman, Ya. G.; Vonsyatskiy, V. A. [illegible] B. I., Berlin, A. A.

[illegible] magnetic resonance in polymers with [illegible]

SOURCE: AN SSSR. Doklady, v. [illegible]

TOPIC TAGS: nuclear magnetic [illegible]

ABSTRACT: The nuclear magnetic resonance [illegible] mine if the molecules [illegible] planar. The magnetic [illegible] phenylene and methyl [illegible] weight) were determined [illegible] secondary moment of poly[illegible]

L [illegible]-65

ACCESSION NR: AP4012978

theoretical value if the molecule were planar, but agre[illegible] rings were rotated 37° along the C–C bond between the rings. Results are similar for polyazophenylene. The moment for the methyl-substituted polyazophenylene was found to be no higher than that of the unsubstituted; this indicates noncoplanarity of the adjacent rings and rotation of the methyl group in the molecule even at 196C. Orig. art. has: 1 table, 1 figure, and 3 formulas.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR [illegible] Chemical P[illegible] Academy of Sciences SSSR [illegible] Scientific Research Inst[illegible]

SUBMITTED: 04Sep63 ENCL: 00

[illegible] NO REF SOV: 00[illegible]

Card 2/2

= 10 (2/26) =

BERLIN, A.A.; GRIGOROVSKAYA, V.A.; PARINI, V.P.; GAFUROV, Kh.

Local activation effect in the low temperature pyrolysis of anthracene and bianthryl. Dokl. AN SSSR 156 no.6:1371-1374 Je '64.
(MIRA 17:8)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom V.N. Kondrat'yevym.

L 21073-65 EWG(j)/EWT(m)/EPF(c)/EPR/EWP(j)/T/EWA(h)/EWA(1) [illegible]

[illegible]

TOPIC TAGS: macroradical reaction, solid phase reaction, [illegible] dimethacrylate, electron paramagnetic resonance

ABSTRACT: The authors investigated the possibility [illegible]

interact [illegible] aromatic compounds (anthracene, acridine), interaction with quinones (benzoquinone, tetrachlorobenzoquinone), detachment of a labile atom (hydrogen in the case of ethylbenzene, chlorine in [illegible]) [illegible]. The source of radicals [illegible]

[illegible] EPR spectra, [illegible]

Card [illegible]

L 21072-65

different substances and temperatures. The authors [illegible]

[illegible]

[illegible] because the mechanical energy [illegible]

ASSOCIATION: Institut khimicheskoy fiziki Akademii [illegible] [illegible] Physics, Academy of Sciences SSSR)

OTHER: 000

Card 2/2

L 32999-65 [illegible]

AUTHOR: Berlin, A. A.; Korolev, G. V.; Cherkashin, M. I.; Sel'skaya, O. G.; Makhonina, L. I.; Belova, G. V.; [illegible]

[illegible]

[illegible] znakov, no. 4, 1965, 59-60

TOPIC TAGS: stabilization, thermal stability, polymer

ABSTRACT: This Author's Certificate introduces a method for thermal stabilization of three-dimensional polymers and copolymers of unsaturated esters by adding 1-5% thermal stabilizers to the monomer or oligomer. Products of pyrolysis of polyaryl-acetylenes are used, yielding a product which is stable at [illegible]

ASSOCIATION: none

SUBMITTED: [illegible] ENCL: 00 [illegible]

[illegible]

Card 1/1

ETC(m)-6 WW/RM

ACC NR: AP6003951

SOURCE CODE: UR/0374/65/000/005/0145/0148

AUTHOR: Berlin, A. A. (L'vov); Shuter, L. M. (L'vov)

ORG: none

61

B

TITLE: Determination of the flow temperature of polymers 7,44,55

SOURCE: Mekhanika polimerov, no. 5, 1965, 145-148

TOPIC TAGS: polymer, polyethylene plastic, polyamide, temperature sensitive element, temperature dependence, transition flow

ABSTRACT: A device 15 for the direct determination of polymer flow temperature has been developed. It excludes the necessity of observation of the transition moment of the polymer to the flowing state. The method of flow point determination by the device described above provides reproducible data over a wide range of film thickness and pressure stresses, and ensures also good conformity of results obtained with the literature data. The possibility of determining the nature of the value of the transition temperature of the polymer to the flowing state by means of temperature dependent curves of the transition time is shown. Orig. art. has: 3 figures and 2 tables. [Based on author's abstract]

SUB CODE: 11 SUBM DATE: 26Apr65/ ORIG REF: 007/ OTH REF: 003/

GC

Card 1/1

UDC: 678.01.53

2

BERLIN, A.A.; BELOVA, G.V.; SEL'SKAYA, O.G.

Studying the thermal oxidative degradation of polymers with a conjugated system of bonds. Plast. massy no.8:3-5 '65.
(MIRA 18:9)

L 23635-65 EWT(m)/EPF(c)/EPR/EWP(j)/T/EWP(v) Pc-4/Pr-4/Ps-4 WW/RM

ACCESSION NR: AP5002818 S/0191/65/000/001/0003/0007

AUTHOR: Berlin, A.A.; Bass, S.I.

B

TITLE: Preparation and some transformations of the oligomeric products of chloroparaffin [illegible]

[illegible] skiye massy, no [illegible]

TOPIC TAGS: oligomer, dehydrochlorination, chloroparaffin [illegible]

[illegible] were [illegible] the introduction of the epoxide group increased the [illegible]

Card

L 23635-65
ACCESSION NR: AP5002818

chlorinated products formed by both methods is compared. The epoxidized oligomers were [illegible] by using [illegible] [illegible] of products with different [illegible]

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 [illegible]

NO REF SOV: 008 OTHER: 014

Card 2/2

L 40969-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM

ACCESSION NR. AP5006413 [illegible]

[illegible]

[illegible]

[illegible] derivative peroxides, [illegible]

ABSTRACT: [illegible] were examined [illegible]

[illegible] obtained during the synthesis of subsequent [illegible]

[illegible] with a conjugated bond [illegible]

ity and on the physical and chemical properties of these substances [illegible]

peroxide radicals, accelerate and change the chemism of anthra[illegible]

erate polymerization and copolymerization of compounds with [illegible]

[illegible]

Card [illegible]

L 40969-65

ACCESSION NR: AP500641う

has: 1 table, 4 equations.

[illegible] ...cheskiy [illegible] AN [illegible]

[illegible]

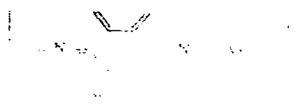
[illegible] ENCL: 00

Card 2/2

[illegible] EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T/[illegible]

TITLE: Reaction products of anthraquinone with aromatic [illegible]

[illegible]



where Ar = C_6H_4 or $(C_6H_4)_2$. The reaction product for phenylenediamine is partly [illegible] heated in an inert atmosphere for [illegible]

L 29516-65

[illegible]

SUBMITTED: 30Nov64 EN[illegible]

BERLIN, A.A.; BASS, S.I.

Effect of local magnetic fields created by paramagnetic particles on chemical reactions. Teoret. i eksper. khim. 1 no.2:151-159 Mr-Ap '65. (MIRA 18:7)

1. Institut khimicheskoy fiziki AN SSSR, Moskva i Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.Lomonosova.

L 27788-65 [illegible] EPA(s)-2/EPF [illegible]
ACCESSION NR: [illegible]

[illegible] I. Kovarskaya [illegible]

[illegible] Stabilization of polyethylene terephthalate

[illegible] polyethylene terephthalate [illegible]

[illegible] thermal stability of polyethylene terephthalate [illegible]
the presence [illegible] of thermally activated [illegible]
[illegible] mechanical and dielectric [illegible]
[illegible] thermal decomposition [illegible]

[illegible]
1% additions were more effective than non-activated anthracene and decreased the

Card 1/2

ACCESSION NR: AP5004309

gas generation at 260C and 410 mm Hg oxygen [illegible]

[illegible] showed improved tensile strength, both longitudinal and crosswise, an increase in specific electrical resistance and a slight decrease in [illegible]. In 0.1% concentration the additive also had a significant [illegible]

ASSOCIATION: None

SUBMITTED: [illegible] ENCL: [illegible]

[illegible]

Card 2/2

BERLIN, A.A.; D'YAKONOVA, V.P.; TIKHOMIROVA, Ye.I.

Polyester acrylate emulsions as binders for cellulose fiber materials. Plast. massy no.4:55-57 '65. (MIRA 18:6)

L 32993-65 EWT(m)/EPA(s)-2/EPF(c)/EWP(v) [illegible]

[illegible]skaya, I. I.; Bass, S. I.; Kovarskaya, B. M. [illegible]

TITLE: A method for stabilizing polyamides [illegible]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. [illegible], 1965, 58

TOPIC TAGS: [illegible]

ABSTRACT: This Author's Certificate introduces a method f[illegible] against destruction by thermal oxidation. [illegible]

Card [illegible]

L 38281-65 EWT(m)/EPF(c)/EWG(m)/EWP([illegible]
ACCESSION NR: AP50075[illegible]

AUTHORS: Berlin, A. A.; Bass, S. I.

TITLE: A method for obtaining oligomers capable of polymerization. Class 39,
No. 151821

SOURCE: Byulleten' izobretenly [illegible]

ABSTRACT: [illegible]

[illegible] hydrocarbons [illegible]

[illegible], to obtain oligomer substances [illegible] unsaturated acids. In an alternate
electrical conductivity, chlorparaffins are treated at high temperatures with anion-exchange properties and high
heterocyclic compounds such as pyridine, quinoline, dipyridyl, etc.

ASSOCIATION: none

Card 1/2

[illegible] (c)/EWP(j)/EWA(c) Pc-4/Pr-4 RM

ACCESSION NR: AP5008195

S/0286/65/000/005/0070/0070

AUTHOR: Berlin, A. A.; Liogon'kiy, B. I.; Popova, [illegible]; Vonsyatskiy, V. A.

[illegible] heat and light [illegible]

[illegible] izobreteniy i tovarnykh [illegible]

TOPIC TAGS: polymer, halogenated polymer, polymer stability, stabilizing inhibitor, polyazophenylene

ABSTRACT: Oligomeric polyazophenylenes, their mixtures [illegible] mixtures with other stabilizers, e.g., hydroquinone, can be used [illegible] gen-containing, high-molecular-weight compounds.

SUBMITTED: [illegible]

ENCL: 00

NO REF SOV: 000

OTHER: 000

SUB CODE: OC, GC

Card 1/1

ATD PRESS: 3211

L 16509-66 EWT(m)/EWP(j)/T/ETC(m)-6 WW/RM

ACC NR: AP6001492 (A) SOURCE CODE: UR/0191/65/000/012/0008/0010

AUTHORS: Berlin, A. A.; Korolev, G. V.; Makhonina, L. I.; Sel'skaya, O. G.; Belova, G. V.

ORG: none

TITLE: Effect of conjugated polymers upon polymerization 44,55 of oligoesteracrylates and thermal stability of the produced polymers 53 52 B

SOURCE: Plasticheskiye massy, no. 12, 1965, 8-10

TOPIC TAGS: oligomer, thermal decomposition, stabilizer additive, conjugated polymer, polyester plastic, polymerization kinetics / ATV-2 thermal scales, [illegible] ~~AN SSSR construction~~, MDF-2 polyesteracrylate, MBF-1 polyesteracrylate

ABSTRACT: Thermal stability 12 of three-dimensional polyesteracrylate 15 (I) was studied by using conjugated thermostabilizers: polyphenylene (II), polyazophenylene (III), polyphenylacetylene (IV), polytolane (V), anthracene (VI), and thermally treated (IV) and (VI). Kinetic study of polymerization of I was performed according to the method described by G. V. Korolev (Plast. massy, No. 3, 51, 1963). Kinetic curves of the thermal-oxidative decomposition of cured I were

Card 1/3

UDC: 678.01:335

Z

L 16509-66

ACC NR: AP6001492

obtained by heating at 200C in air on automatic thermal scales ATV-2 constructed by IKhF AN SSSR. Specimens were 0.70 ± 0.02 mm thick and weighed 70 mg. The data obtained are summarized in Figs. 1 and 2.

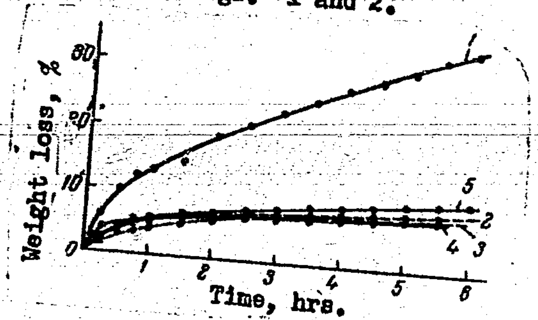


Fig. 1. Effect of the addition of thermal stabilizers upon the thermo-oxidative decomposition of I, type MDF-2: 1 - no thermal stabilizer; 2 - thermally treated IV; 3 - yellow IV; 4 - IV, II; 5 - V.

Card 2/3

L 16509-66

ACC NR: AP6001492

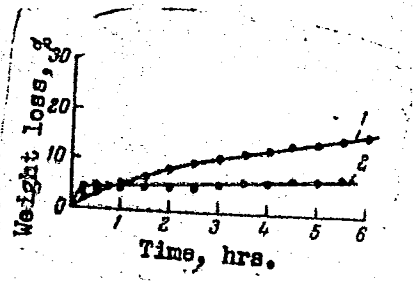


Fig. 2. Effect of the addition of thermally treated VI upon the thermo-oxidative decomposition of I, type MBF-1: 1 - no additive; 2 - 5% of VI.

It was established that addition of 5% of either of the tested thermal stabilizers completely retarded destruction of I. In lower concentrations (up to 1%), thermally treated IV was most effective. It is concluded that deactivating ability of this type of thermal stabilizers increases with temperature, which is in contrast to the behavior of other known stabilizers. Orig. art. has: 4 figures.

SUB CODE: 07/ SUBM DATE: none/ ORIG REF: 010/ OTH REF: 001

Card 3/3 SM

MULIKOV, V.F.; GAFUROV, Kh.M.; GACHKOVSKIY, V.F.; PARINI, V.P.;
BLYUMENFEL'D, L.A.; BERLIN, A.A.

Influence of paramagnetic centers on some physical properties of anthracene. Izv. AN SSSR. Ser. khim. no.5:932-933 '65. (MIRA 18:5)

1. Institut khimicheskoy fiziki AN SSSR.

L 60048-65 EWG(j)/EWP(e)/EWT(m)/EPF(c)/EWP(i)/EWP(j)/EWP(h) [illegible]

[illegible]

ACCESSION NR: AP5017959 UR/0062/65/00[illegible]/006[illegible]

541.124

AUTHOR: Kasatochkin, V. I.; Berlin, A. A.; Smitkina, Z. [illegible]; [illegible]

TITLE: Mechanism of the thermal carbonization of chlorine-containing carbon-chain polymers

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 6, 1965, 1003-1009

TOPIC TAGS: polyvinyl chloride, polyvinylidene chloride, [illegible]

ABSTRACT: Polyvinyl chloride (PVC), chlorinated polyv[illegible] [illegible] were studied [illegible]

[illegible] peak at 450[illegible] [illegible]

1/2

L 60048-65

ACCESSION NR: AP5017959

7

volatile substances; this peak corresponds to the destruction of the side bonds [illegible] condensed aromatic [illegible]

[illegible]

structure is formed which changes into a condensed aromatic [illegible]

[illegible]

[illegible] Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR); Institut goryuchikh [illegible] (In-

NO REF SOV: 002 OTHER: 000

L 01003-66 EPA(s)-2/EWT(m)/EPF(c)/EWP(j)/T WW/RM

ACCESSION NR: AP5019562

UR/0191/65/000/008/0003/0005
678.766.2.01:536.495:543.872

AUTHOR: Berlin, A. A.; 44,55 Belova, G. V.; 44,55 Sel'skaya, O. G. 44,55 48

15,44,55 B

TITLE: Study of the thermal-oxidative degradation of polymers with a conjugation system 7

SOURCE: Plasticheskiye massy, no. 8, 1965, 3-5

TOPIC TAGS: heat resistant polymer, organic semiconductor, 15 semiconducting polymer, polyphenylene, polyphenylvinylene, thermal stability

ABSTRACT: A thermogravimetric study has shown the high thermal-oxidative stability of certain conjugated polymers of the polyphenylene 7 and polyphenylvinylene 7 type. For example, the weight loss in polyphenylene held for 9.5 hr at 400C did not exceed 5%. It is postulated that on heating these polymers, in addition to degradation processes, processes are also possible which involve cross-linking and the formation of segments with condensed rings. This increases the stability range of such polymers. The authors express their appreciation to V. A. Vonsyanskiy 44,55 and V. P. Parini 44,55 for making the polyphenylenes available. Orig. art. has: 4 figures and 1 table.

[SM]

Card 1/2

L 01003-66

ACCESSION NR: AP5019562

0

ASSOCIATION: none

SUBMITTED: 00	ENCL: 00	SUB CODE: OC, GC
NO REF SOV: 008	OTHER: 005	ATD PRESS: 4069

Card 2/2 DP

L 2556-66 EWT(m)/EPF(c)/EWP(v)/EWP(j)/T WW/RM

ACCESSION NR: AP5024106 41 50 B UR/0138/65/000/009/0023/0026
678.7:539.612

AUTHOR: Shmurak, I. L.44,55; Uzina, R. V.44,55; Berlin, A. A.44,55 15,44,55

TITLE: Certain factors determining the chemical bond formation on the adhesive-substrate boundary

SOURCE: Kauchuk i rezina, no. 9, 1965, 23-26

TOPIC TAGS: adhesion, adhesive, substrate, interpolymerization

ABSTRACT: Examination of factors determining chemical bond formation on the adhesive-substrate boundary with a view toward increasing the adhesion strength of polymer systems resulted in the following conclusions: A high adhesion strength can be attained as a result of interpolymerization via the functional groups of the adhesive and substrate. "Onium" interpolymerization, which proceeds with a low activation energy and forms no by-products, is of particular interest. This conclusion was confirmed experimentally for cord-adhesive-rubber systems in which, e.g., the adhesive contained butadiene-acrylonitrile copolymers with varying component ratios and the rubber contained chlorosulfonated polyethylene. The close contact between the adhesive and substrate macromolecules, required for interpolymerization, can be achieved by making adhesive macromolecular chains sufficiently flexible. This, in

Card 1/2

L 2556-66

ACCESSION NR: AP5024106 6

turn, can be done by reducing the polar group content in the adhesive copolymers. Orig. art. has: 1 figure and 1 table. [BO]

44,55

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry); Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

44,55

SUBMITTED: 00

ENCL: 00

SUB CODE: OC,GC

NO REF SOV: 014

OTHER: 000

ATD PRESS: 4108

Card 2/2

L 2941-66 EWT(m)/EPF(c)/EWP(j)/T/EWA(c) WW/RM

ACCESSION NR: AP5024403

UR/0286/65/000/015/0082/0082

AUTHOR: Berlin, A. A.44,55; Ragimov, A. V.44,55; Kefeli, T. Ya.44,55

TITLE: Preparative method for heat-resistant polymers 15 44,55 Class 39, No. 173412 15

31

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15, 1965, 82

TOPIC TAGS: heat resistant polymer, ion exchange resin, esterification catalyst, semiconducting polymer, electron exchange resin

ABSTRACT: An Author Certificate has been issued for a preparative method for heat-resistant polymers from diazo compounds. To obtain a polymer with redox and ion-exchange properties, bisdiazotized benzidinesulfonic acid is reacted with quinones, e.g., benzoquinone. The polymer can be used as an esterification catalyst which simultaneously inhibits resinification and prepolymerization. [SM]

ASSOCAATION: none

SUBMITTED: 22Feb62

ENCL: 00

SUB CODE: OC,GC

NO REF SOV: 000

OTHER: 000

ATD PRESS: 4110

Card 1/1

L 10878-66 EWT(m)/EWP(j)/T RPL RM
ACC NR: AP5028254 SOURCE CODE: UR/0379/65/001/004/0511/0518

AUTHOR: Liogon'kiy, B. I.; 44,55 Ragimov, A. V.; 44,55 Berlin, A. A. 44,55

ORG: Institute of Chemical Physics, AN SSSR, Moscow 44,55 (Institut khimicheskoy fiziki AN SSSR)

TITLE: Preparation and study of stable polyradicals 7, 44,55 of semiquinone type

SOURCE: Teoreticheskaya i eksperimental'naya khimiya, v. 1, no. 4, 1965, 511-518

TOPIC TAGS: quinone, free radical, electron paramagnetic resonance

ABSTRACT: The treatment of polyarylenequinones 7 (PAQ) with alcoholic alkali forms polyradicals of semiquinone type (PSQ), which were identified with EPR and IR spectra. It was found that in alcoholic alkali there occurs not only an oxidation of the hydroquinone form, but also a reduction of the quinone form of PAQ to semiquinone polyradicals, this being due to the electron-donor properties of the hydroxyl ion. The rate of formation of PSQ and their stability in alcoholic alkali were studied, and the semiquinone conversions of mono-, di-, tri-, and tetraphenylquinones were investigated for comparison. PSQ isolated in the solid form, washed, and dried under vacuum at room temperature retained a strong EPR signal in air for many weeks. They also proved stable on heating in air and in a vacuum at

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L 10878-66
ACC NR: AP5028254

100—123C. The great stability of PSQ relative to that of low-molecular semiquinones is due to the presence of a conjugation chain and to the rigidity of the PAQ structure. The formation of unpaired electrons and their participation in conduction processes is confirmed by a sharp increase in electrical conductivity in passing from PAQ to PSQ. Orig. art. has: 7 figures and 1 table.

SUB CODE: 07 / SUBM DATE: 16Feb65 / ORIG REF: 010 / OTH REF: 004
/8

OC

Card 2/2

LIKHTENSHTEYN, G.I.; SIVERGIN, Yu.M.; BERLIN, A.A.

Application of the adiabatic method for the determination of kinetic and thermodynamic parameters of processes. Teoret. i eksper. khim. 1 no. 5:690-694 S-O '65 (MIRA 19:1)

1. Institut khimicheskoy fiziki AN SSSR, Moskva. Submitted March 8, 1965.

ASEYEVA, R.M.; ASEYEV, Yu.G.; BERLIN, A.A.; KASATOCHKIN, V.I.

Spectral study of the products of oxidation of high-molecular conjugate polyenes. Zhur. strukt. khim. 6 no.1:47-52 Ja-F '65. (MIRA 18:12)

1. Institut khimicheskoy fiziki AN SSSR. Submitted November 19, 1963.

L 1137-66 EWT(m)/EPF(c)/EWP(j)/T WW/RM

54
51

ACCESSION NR: AP5021680 UR/0192/65/006/004/0649/0651
541.67

AUTHOR: Gafurov, Kh. M.; Mulikov, V. F.; Gachkovskiy, V. F.; Parini, V. P.; Berlin, A. A.; Blyumenfel'd, L. A.

TITLE: Effect of local paramagnetic centers on the optical and photoelectric properties of anthracene

SOURCE: Zhurnal strukturnoy khimii, v. 6, no. 4, 1965, 649-651

TOPIC TAGS: anthracene, paramagnetism, pyrolysis, optic property, photoelectric property

ABSTRACT: Soluble products of the pyrolysis of anthracene at 450C were subjected to thin layer chromatography on aluminum oxide and the fraction with a mean molecular weight of approximately 1000 was separated out. The intensity of the signal in the temperature interval from -15C to 25C obeyed Curie's law. The width of the symmetrical electron paramagnetic resonance line was about 6 oersteds. The elemental composition of the polymer fraction was: C = 92.98%; H=5.06%. The anthracene was purified by zone melting and was blended with the polymer fraction by mixing benzene solutions of both components. After holding for two days, the solution was chilled and the benzene was eliminated in vacuum.

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L 1137-66

ACCESSION NR: AP5021680 3

The samples were then evacuated for 8 hours at a vacuum of 10^{-6} mm Hg. The electron spectra of the samples, taken in chloroform, were a superposition of the spectra of anthracene and the fraction with paramagnetic centers. Measurements of the fluorescence spectra and of the time characteristics of the decay of the photocurrent indicate that both of these quantities are extremely sensitive to very small amounts of paramagnetic centers. The symbatic change of the yields of fluorescence and photocurrent with a change in the concentration of paramagnetic centers permits the assumption that these centers affect these characteristics by the same mechanism. Orig. art. has: 3 figures

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR) 44,55

SUBMITTED: 15Feb65 ENCL: 00 SUB CODE: OC, GC

NR REF SOV: 020 OTHER: 001

Card 2/2

AUTHOR: Berlin, A. A.; Sherle, A. I.; Belova, G. [illegible]; Borevev, [illegible]

TITLE: [illegible] Synthesis and investigation of [illegible]

the reaction [illegible] tetracyanoethylene with [illegible]

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, [illegible]

TOPIC TAGS: coordination polymer, polytetracyanoethylene, tetracyanoethylene

ABSTRACT: Communication 58 of the series "Polymers with a Conjugated System" reports the preparation of copper, iron, and magnesium tetracyanoethylene (TCE) coordination polymers and metal-free [illegible] [illegible] were made [illegible] [illegible] of argon at 210C for 10 hr. All the coordination [illegible] were infusible black powders, insoluble in the [illegible] but soluble in concd H_2SO_4. The copper-containing polymer was stable in H_2SO_4, but the magnesium-containing polymer lost the metal to form

ACCESSION NR: AP5003830

[illegible] tetracyanoethylene with [illegible] tetracyanoethylene. Thermal [illegible] were typical of conjugated polymers. A porphyrazine structure was assigned to the polymers. Orig. art. has: 3 figures, 1 table, and 3 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AN SSSR)

SUBMITTED: [illegible] ENCL: [illegible]

NO REF SOV: [illegible] OTHER: [illegible]

Card 2/2

ABSTRACT: The solid phase polymerization of acrylonitrile [illegible]

[illegible]

[illegible] of polymerization). It can be noted from the results [illegible] field, b

L 4411-65 EPF(c)/EPR/EWG(j)/EWA(h)/EWP(j)/EWT(m)/T/EWA(l) Pc-4/Pr-4/Ps-4/Peb
AW/RM

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

[illegible] activity of conjugated bond polymers in thermooxidative
[illegible] degradation of polyvinylchloride

[illegible]
tion reaction

ABSTRACT: The authors tested polymers with the conjugated aromatic chain (poly-
phenylene, polyazophenylene, and polyphenylene aminoquinone) for their stabilizing
effects on polyvinylchloride. The temperature was measured at the beginning of
HCl liberation, the duration of the inductive period up to the beginning of HCl
liberation, [illegible] and the initial and average [illegible] rate of
[illegible]
determined in air and in nitrogen (oxygen [illegible] thermal degradation of poly-
compounds retard thermooxidation but do not retard [illegible]
vinylchloride. Polyphenylene and polyphenylene aminoquinone are photosensitizers
at concentrations of 0.2-1%, but at concentrations of 5-10% they prevent the

Card 1/2

L 45411-65

ACCESSION NR: AP5011242

deleterious aftereffects of ultra violet [illegible]

NO REF SOV: 007 OTHER: 003

Card 2/2

LIOGON'KIY, B.I.; RAGIMOV, A.V.; ASEYEV, Yu.G.; BERLIN, A.A.

Spectral study of polymeric arylene quinones and some products of their transformation. Vysokom. soed. 7 no.4:661-669 Ap '65. (MIRA 18:6)

1. Institut khimicheskoy fiziki AN SSSR.

CHERKASHINA, L.G.; FRANKEVICH, Ye.L.; YEREMINA, I.V.; BALABANOV, Ye.I.;
BERLIN, A.A.

Synthesis and electrophysical properties of polymeric phthalocyanines.
Vysokom.soed. 7 no.7:1264-1269 Jl '65.
(MIRA 18:8)

1. Institut khimicheskoy fiziki AN SSSR.

L 61647-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP5015597 UR/0062/65/000/005/0932/0933
541.67+547.672

42
41
0

AUTHOR: Mulikov, V. F.; Gafurov, Kh. M.; Gachkovskiy, V. F.; Parini, V. P.; Blyumenfel'd, L. A.; Berlin, A. A.

TITLE: Effect of paramagnetic centers on some of the physical properties of anthracene

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 5, 1965, 932-933

TOPIC TAGS: anthracene, paramagnetic resonance, electron spin resonance, fluorescence, photoconductivity

ABSTRACT: It has been shown earlier that the presence of local magnetic centers affects the chemical behavior of compounds with conjugated bonds, particularly their reactivity (effect of local activation). The authors found that the presence of magnetic centers also has a considerable effect on the physical properties of such compounds. The soluble paramagnetic fraction (MW ~1000, ESR signal intensity 2.6 x 10^{18} spin/g) separated from the thermolysis products of anthracene was introduced into anthracene purified by zone melting. Samples of anthracene doped in this manner contained paramagnetic centers in concentrations of

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