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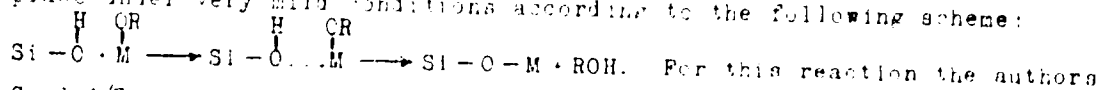
S/190/61/003/006,007/013
B110/B216

AUTHORS: Nudel'man, Z. N., Sviridova, A. V., Novikov, A. S.

TITLE: Synthesis of linear alumosiloxane polymers by silanol condensation

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 6, 1961, 841-845

TEXT: Since no method has been described for the preparation of linear metallosiloxanes of preset structure, the authors tried to synthesize these polymers by applying silanol condensation (Ref. 1: Kauchuk i rezina, 1960, No 5, 17). This condensation takes place on mixing organo-silicon compounds containing the silanol group Si-OH with alkoxy derivatives of metals, organometallic groups or silicon (e.g. aluminum alcoholates, dialkoxo derivatives of the monoacetylacetonate, other aluminum complexes, alkoxy derivatives of titanium, tin and iron, etc.). Separation of the alcohol and formation of the metallosiloxane bond take place under very mild conditions according to the following scheme:



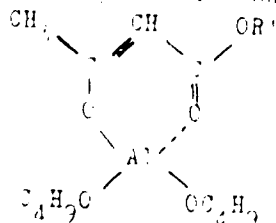
Card 1/2

23764

Synthesis of linear alumsiloxane

S/170/61/003/006/007/019
B110/B216

used a bifunctional aluminum alkoxide with 2 reactive alkoxy groups, i.e., an aluminum butylate-acetoacetic ester complex:



Owing to its uniform electron density distribution over the ring, this complex is more resistant to hydrolysis than the alkoxy groups. On treatment with water, the alkoxy groups are hydrolyzed off, and condensation yielding a linear alumsiloxane polymer takes place. A similar behavior was to be expected in silanol condensation. Polydimethylsiloxane (molecular weight 3,000-50,000) having silanol groups at the ends of the chain was used as reaction partner. The two components were mixed in benzene in the required ratio and the polymer formed then precipitated with acetone. The polysiloxane molecules of high molecular weight determined the basic

Card 2/7

23764

S/190/61/003/006/007/019
B110/3216

Synthesis of linear alumosiloxane...

properties of these modified alumosiloxane derivatives (MAS), which are modified by aluminum links. The time required for the reaction is directly proportional to the molecular weight of the polydimethylsiloxane derivative used. A comparison of the viscosities of MAS (Table 1) in toluene and solutions of the initial siloxane indicates the increased molecular dimensions of MAS. Their greater hardness is due to the formation of donor-acceptor bonds between the aluminum groups of different polymer molecules and to multiple coordination of the aluminum atom. The oxygen atom in the alkoxy group of the acetoacetic ester has the greatest electron density and is able to form complexes. For this reason the ethyl and octyl esters of acetoacetic acid, having different complexability were used. Hardness was determined thermomechanically according to Kargin in the temperature range -60°C to 200°C (at a rate of 4°C per 10 min). The extent of intermolecular interaction is mainly determined by the relative number of aluminum links in the chain. The properties due to the aluminum links are more marked if the initial siloxane is lower-molecular. The Al content of MAS depends only on the molecular weight of the initial siloxane and not on the ratio aluminum complex/siloxane (26,300 = 1.99 % Al; 3160 = 3.61 % Al). The greater hardness of the second

Card 3/7

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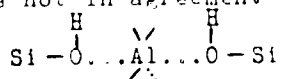
S/130/61/003/006/007/019
B110/B216

Synthesis of linear alumosiloxane...

polymer is due to its higher Al content and the numerous Al links. The above-stated composition is confirmed by the findings that the polymers are completely soluble in benzene and toluene, flow under pressure, melt on heating and sinter at high temperatures. The residual compression is also characteristic of structureless polymers. This is corroborated by the viscosity (Table 1) and the presence of Al in these polymers.

Acetylacetone forms very stable acetylacetonates with the Al of many aluminum compounds, splitting the Si-O-Al bond. On treating MAS with excess acetylacetone at room temperature (Table 2), the initial polydimethylsiloxanes were regenerated, which shows that condensation did not take place: $Si-OH + HO-Si \xrightarrow{Al} Si-O-Si + H_2O$. Heating of MAS to

>200°C leads to reversible softening, which together with its resistance to pyridine, is not in agreement with the presence of a large number of complex bonds



This method can also be applied in the synthesis of linear polymers modified by titanium, tin, iron, etc., in the given order, their properties

Card 4/7

23764

Synthesis of linear alumosiloxane...

S/190/61/003/006/007/019
3110/3216

depending on the metal alkoxide used and its ratio to the polysiloxane.
There are 1 figure, 2 tables, and 3 references: 2 Soviet-bloc and
1 non-Soviet-bloc.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of Rubber Industry)

SUBMITTED: July 25, 1960

Table 1: Viscosity of toluene solutions of MAS in initial polydimethyl-
siloxane derivatives. a) Mol.wt. of initial polydimethylsiloxanes;
b) polydimethylsiloxane; c) concentration, g/100 ml; d) given rate;
e) MAS; 1) viscosity at 20°C; 2) viscosity at 25°C.

Card 5/7

28174

S/190/61/003/010/001/019
B130/B110

11.2211

AUTHORS: Devirts, E. Ya. Novikov, A. S.

TITLE: Oxidation of butadiene-nitrile rubber

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 12, 1961,
1441-1445

TEXT. The authors studied the oxidation of butadiene-nitrile rubber in the presence of inhibitors. They examined rubbers of the types CKH-18 (SKN-18) (I), CKH-26 (SKN-26) (II), and CAH-40 (SKN-40) (III) in the form of films in a micro-oxidation device. The film thickness was 0.8 - 1mm. The oxygen absorption was determined with an accuracy of 0.01 milliliter. Structural changes during the oxidation were evaluated from the change of solubility in benzene, the intrinsic viscosity, and the hydrodynamical parameter k' . Fig. 1 shows kinetic oxidation curves for I and II containing 2 parts by weight of Neozone B at 130, 135, and 140°C, and for III at 130, 140, and 150°C. The rate of inhibited oxidation of nitrile rubbers was found to be determined by the content of nitrile groups. The Card 1/4

Oxidation of butadiene-nitrile rubber

28174

5/196/61/003, 1960, 19
B130/B110

activation energy of inhibited rubbers was determined from Arrhenius' equation. It was 29-31 kcal/mole, i. e., ~ 9 kcal/mole higher than the activation energy of inhibited (KC-30 (SBS-30), and ~ 10 kcal/mole higher than that of (KB (SKB) rubber. The structural changes are also determined by the content of nitrile groups. In II and III, a structuration process mainly occurs during oxidation; in I, at first a destruction process prevails, and only in later stages, a structuration process occurs. A correlation was found to exist between the behavior of SKM rubbers and thermo-oxidative mastication. There are 5 figures, 1 table, and 7 references: 6 Soviet and 1 non-Soviet. The reference to the English language publication reads as follows: I. M. Shelton, H. Winn, Rubber Chem. and Technol. 19, 696-711, 1946.

ASSOCIATION. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of the Rubber Industry)

SUBMITTED. September 30, 1960

Card 2/4

15 9450

11. 2214

28182

S/190/61/003/010, 011, 019
B124/B110

AUTHORS: Lyubimov, A. N., Novikov, A. S., Galil' Oliy, F. A.
Gribacheva, A. V., Varenik, A. P.

TITLE: Application of nuclear magnetic resonance to studies of
rubber-like fluorine-containing polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 10, 1961,
1511 - 1515

TEXT: The authors determined the temperature dependence of the width of nuclear magnetic resonance bands and the second moment in fluorine-containing rubber-like polymers of different elastic properties. The following copolymers were investigated: trifluoro chloro ethylene and vinylidene fluoride (I); hexafluoro propylene and vinylidene fluoride (II); trifluoro chloro ethylene, vinylidene fluoride, and perfluoro methoxy perfluoro propyl acrylate (III); homopolymer of perfluoro methoxy perfluoro propyl acrylate (IV); and polyhexafluoro pentamethylene adipate (V). A nuclear magnetic resonance spectrometer of the usual type having linear scanning and sinusoidal modulation of the polarization field and autodyne nuclear signal pick-up was used for measurement. The field

Card 1/5

2882

S/190/61/003/010, 011, 019

B124/B110

Application of nuclear...

homogeneity determined from the resolution of chemical resonance shifts of F^{19} was 10^{-5} within 0.5 cm^3 . For all polymers investigated, the derivatives of the resonance absorption bands of protons and fluorine between -150 and $+120^\circ\text{C}$ were recorded. The second moments of the resonance bands of protons and fluorine were calculated by graphic integration, and their temperature dependence was recorded (Fig. 1). Below -110°C , the second moments measured correspond to those of the solid structures ($16 - 19.5 \text{ gauss}^2$) and decrease with rising temperature, the course for all polymers, except for (V), being identical. The curves obtained show three sections: (1) constant values of the second moment; (2) slow decrease of these values; and (3) rapid decrease of the second moment. The boundary of the first and the beginning of the second section is for all polymers at -110°C ; the end of the second and the beginning of the third section is for (I) and (II) at -20°C , for (III) and (IV) at -40°C , and for (V) at about 60°C . These temperatures correspond to the vitrification points of the respective copolymers which had been determined by Kargin's dynamometer. Above the temperatures mentioned, a mobility of the molecular chain segments appears, whereas

Card 2/5

28182

S/190/61/003, C10, C11, C12
B124, B110

Application of nuclear

in polymer (V) the chains, due to the presence of "hinge" CCO-groups are more mobile than in other polymers and their heat motion sets in almost simultaneously with the beginning of re-orientation of the CH₂ groups

Besides the rotary motions of the individual groups, also some heat motions of chain segments appear in the molecule chains of the polymers studied. By comparing the experimentally determined and the theoretically calculated second moments of hydrogen and fluorine for the copolymer of vinylidene fluoride and trifluoro chloro ethylene, it was proved that, for the two possible compounds of the monomers -CF₂-CFC1- and -CH₂-CF₂- the structure -CF₂CFC1CF₂CH₂- is more probable than the structure

CF₂CFC1CH₂CF₂. A chemical resonance shift of fluorine from (II), caused by the groups CF₂ and CF₃, was observed at +90°C. A. I. Kitaygorodskiy is

thanked for his advice. There are 1 figure and 8 references: 1 Soviet and 7 non-Soviet. The two most important references to English language publications read as follows: W. P. Slichter, J. Appl. Phys. 26, 1099, 1955; W. P. Slichter, J. Polymer Sci. 106, 178, 1957.

Card 3/5

28182

Application of nuclear

S/190/61/003/010/011/019
B124/B110

ASSOCIATION: Nauchno issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of the Rubber Industry)

SUBMITTED: November 13, 1960

Fig. 1. Change of the second moment for fluorine (a) and hydrogen (b) as dependent on the temperature for the copolymers: (1) vinylidene fluoride with trifluoro chloro ethylene; (2) vinylidene fluoride with hexafluoro propylene; (3) homopolymer of perfluoro methoxy perfluoro propyl acrylate; (4) vinylidene fluoride with trifluoro chloro ethylene and perfluoro methoxy perfluoro propyl acrylate; (5) polyhexafluoro pentamethylene adipate.

Legend: (A) temperature, °C; B- ΔH^2 gauss²

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Card 4/5

15 9201

26990

S/138/61/000/005/004/006
A051/A129

AUTHORS: Novikov, A. S., Devirts, E. Ya., Esman, P. I., Petrova, T. K.

TITLE: The properties of soft butadiene-nitrile rubbers and the application of these in the production of rubber articles

PERIODICAL: Kauchuk i rezina, no. 5, 1961, 20 - 26

TEXT: In the last few years, butadiene-nitrile rubber (CKH-SKN) characterized by a high oil- and gasoline-resistance has been widely used in the rubber industry. However, its application is difficult due to its low initial plasticity (1,500 - 3,000 g according to Defoe). In 1955 the NIIRP began work on the production of a soft SKN-40 rubber not requiring mastication. While testing an experimental batch at the NIIRP and at the "Kauchuk" Plant, it was established that due to the application of the soft SKN-40 rubber with a hardness of 900 - 1,300 g the mechanical mastication stage is eliminated and the productivity of the mixing rollers is increased. However, the mixture of the SKN-40 rubber with a hardness of 900 - 1,300 g cannot be produced in the rubber-mixers. During 1959 - 60 experimental-industrial batches of soft butadiene-nitrile rubbers were produced of the following grades: CKH-18 (SKN), SKN-26 and SKN-40. The technological process for

Card 1/5

The properties of soft butadiene-nitrile rubbers and... 26990 S/138/61/000/005/004/006
A051/A129

the production of the soft SKN rubbers does not differ from mass-production, excepting a lower productivity of the drying unit. Experimental soft SKN rubbers were tested at the NIIRP and at rubber article plants. All the produced experimental batches correspond to ГОСТ 7738-55 (OOST 7738-55) for mass-production SKN rubber in their chemical composition and have a much lower hardness (650 - 1,000 g) than the mass-produced rubbers (1,500 - 3,000 g). Comparison showed that experimental soft SKN-40 rubber is almost equivalent to Perbunan 3810 in its tear resistance, residual elongation, modulus, hardness, brittle temperature, thermal aging resistance, temperature resistance, swelling in a mixture of gasoline-benzene, and surpasses Perbunan 3810 in its relative elongation, rupture resistance, elasticity and frost resistance at -15°C. The experimental SKN-40 rubber surpasses also Heickar 1041 in the same indices as Perbunan 3810, and is also characterized by a much higher rate of vulcanization and higher values of tear resistance and moduli. The experimental soft rubber SKN-26 as compared to the English Heickar 1043 is characterized by a much higher rate of vulcanization and an elevated tear resistance. Compared to Perbunan 2810, the experimental soft SKN-26 has a somewhat higher rate of vulcanization and almost the same tear resistance in optimum vulcanization. The soft SKN-18 surpasses Paracryl AJ in its tear resistance and hardly differs at all from

Card 2/5

26990

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A051/A129

The properties of soft butadiene-nitrile rubbers and...

it in other properties. The soft SKN rubbers were tested under industrial conditions used in commercial articles at the rubber article plants. The authors conclude that vulcanizates from soft SKN rubbers with a Defoe hardness of 700 - 1,000g compared to vulcanizates from mass-produced rubbers are characterized by a lowered rate of vulcanization, somewhat lowered values of tear resistance and moduli. The vulcanizates of the soft SKN-18 rubber have also a lower frost resistance coefficient and elasticity. All other properties are almost equivalent. By increasing the sulfur content or the accelerators, an increase in the rate of vulcanization is achieved for mixtures of soft SKN rubbers, and in improvement in the resistance properties of the vulcanizates based on them. Due to the use of soft SKN rubbers in the production of rubber articles the cumbersome and energy-consuming stage of mechanical mastication is eliminated and the output of the mixing rollers is increased. There are 3 graphs and 5 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry) ✓

Card 3/5

28801

S/138/61/000/009/005/011

A051/A129

15.9130

AUTHORS: Devirts, E. Ya., Novikov, A. S.

TITLE: Effect of softening temperature of indene-coumarone resins on the properties of mixtures based on butadiene-styrene rubber and nairite

PERIODICAL: Kauchuk i rezina, no. 9, 1961, 19 - 21

TEXT: The effect of softening temperature was investigated for Soviet-produced indene-coumarone resins on their behavior as softeners and solvents of CKC-30 APM-15 (SKS-30 ARM-15) rubber mixes. The data obtained (Table) revealed that with an increase in temperature of resin softening the plasticity of the mixtures drops. The resin softening temperature has a significant effect on the physico-mechanical properties of the standard vulcanizate mixes of SKS-30 ARM-15 rubber. An increase in this temperature results in an increase in the tear-resistance, standards at 300% elongation and rupture-resistance under normal and elevated temperatures, the hardness of the vulcanizates increases regularly according to TM-2; the recoil elasticity and temperature of brittleness drop. Furthermore, the softening temperature of the resins has no effect on certain other properties of the given vulcanizate, such as the relative and residual elongation, frost-re-

Card 1/3

28801

S/138/61/000/009/005/01.
A051/A129

Effect of softening temperature of...

sistance coefficient at -25°C , temperature-resistance at 100°C , thermal-aging resistance at 100°C over a period of 3 days, and crack-growth resistance. By using a certain type of resin the required combination of properties can be achieved for the raw mixtures and vulcanizates. An increase in the softening temperature improves the mechanical properties of the vulcanizates: the tear-resistance, module at 300% elongation, rupture-resistance at normal and elevated temperatures. It is concluded that: 1) the softening temperature of the indene-coumarone resins within a range of $60 - 120^{\circ}\text{C}$ has a significant effect on the properties of the nonvulcanized mixtures of SKS-30 ARM-15 rubber and nairite and also on the mechanical properties of their vulcanizates; 2) an increase in the softening temperature of the resin reduces the plasticity of the standard mixtures based on SKS-30 ARM-15 rubber and nairite, whereas the mechanical properties of these vulcanizates are improved. There are 5 figures, 1 table and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: Compounding ingredients Ed. II, New York, 1947; M. Yeizer, India Rubber World, 111, no. 3, 312 (1944).

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

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Card 2/3

28801

S/138/61/000/009/005/011
A051/A129

Effect of softening temperature of...

Table. Characteristics of tested samples of indene-coumarone resins

Indices	Number of sample							
	1	2	3	4	5	6	7	8
Softening temperature, °C	62	68	79	89	97	103	112	123
Ash content, %	0.65	0.39	0.70	0.75	0.54	0.34	0.40	0.37
Moisture content, %	0.22	0.25	0.22	0.22	0.22	0.22	0.22	0.22
Solubility in benzene, %	99.81	99.96	99.76	99.96	99.91	99.94	99.92	99.94
Reaction with phenolphthalein and methyl orange	neutral							

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Card 3/3

11 2214
15 9206

31621
3/138/61/000/012/005/000
A051/A126

AUTHORS: Novikov, A.S., Tolstukhina, F.S., Chernov, G.V.

TITLE: Effect of fillers on structure and mechanical properties of Wheighton A vulcanizates

PERIODICAL: Kauchuk i rezina, no. 12., 1961, 30 - 35

TEXT: The effects of fillers on structure and mechanical properties at high temperatures were studied for vulcanizates of the fluorocopolymer Wheighton type. Hexamethyldiamine (GMDA) was used as the vulcanizing agent. The following fillers were investigated: aerosil, ultrasil, microsii, YC -170 (US-170) silica gel, KC -2 (KS-2), Y -333 (U-333), A, AH-6 (A, AN-6), calcium fluoride and calcium silicate. The swelling method was used for the case of creep at high temperatures. The number of effective chains in the lattice per unit of volume was estimated according to the equation:

$$\nu = - \frac{1}{\bar{v}_s} \cdot \frac{\ln(1-V_r) + V_r + \mu \cdot V_r^2}{\frac{1}{V_r^3}}$$

Card 1/3

31621
S/138/61/000/012/005/006
A051/A126

Effect of fillers on structure and

where V_S is the molar volume of the solvent, V_R - volumetric fraction of the polymer in the swollen lattice connected with the equilibrium value of swelling Q_n by the relation

$$V_R = \frac{1}{1 + Q_n} \cdot u \quad u - \text{Flory's Constant}$$

The volume of the absorbed solvent was determined by dividing the difference between the weight of the swollen and dry sample into the density of the solvent. The molecular weight of the chain section between the points of the lattice of the vulcanizate (M_c) was calculated with:

$$M_c = \frac{1}{\nu} \cdot \rho_r$$

where ρ_r is the specific weight of the polymer. It was established that the introduction of the filler changes the structure of the vulcanizate, increasing the molecular weight M_c of the vulcanizate lattice. The degree of increase of M_c depends on the filler type. The degree of transverse lacing affects the true tensility of the Wheighton A vulcanizates. In the region of dense and

Card 2/3

31621

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A051/A126

Effect of fillers on structure and

loosely spaced lattices, there is a drop in the tensility of the vulcanizates noted. The fillers were found to affect the life of the vulcanizates to a considerable degree. The creep of the vulcanizates, based on Wheighton A can be reduced by using fillers and by increasing the number of transverse bonds in the vulcanizates. The drop of the true tensility for vulcanizates with a high number of transverse bonds is explained by the difficulty encountered by the effects of orientation of the polymer chains. The creep was measured with a lever-type instrument, and the effect of temperature on it was investigated by simultaneous measurement of the true values of the residual deformations and by determining the change in structure during creep, according to the values of maximum swelling Q_m . An increase in temperature leads to an increase in the rate of deformation on a linear section. There are 4 tables, 4 figures and 3 references: 1 Soviet-bloc and 2 non-Soviet-bloc. The reference to the most recent English-language publication reads as follows: P.J. Flory, Chem.Phys., 10, 100 (1950)

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of the Rubber Industry)

Card 3/3

DEVIRTS, E.Ya.; NOVIKOV, A.S.

Properties of butadiene-nitrile rubbers produced abroad. Kauch. i rez. 20
no.1:4-6 Ja '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Rubber, Synthetic) (Butadiene)

DEVIRTS, E.Ya.; NOVIKOV, A.S.; Prinimala uchastiye SHELAGINA, L.

Investigation of the structure of pure gum vulcanizates from
SKS-30 rubber containing indene-coumarone resins. Kauch. 1
rez. 20 no.10:11-14 0 '61. (MIRA 14:12)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Gums and resins, Synthetic)
(Rubber, Synthetic)

NOVIKOV, A.S.; TOLSTUKHINA, F.S.; CHERNOV, G.V.

Effect of fillers on the structure and mechanical properties
of viton A vulcanizates. Kauch. i rez. 20 no.12:30-35 D '61.
(MIRA 15:1)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Rubber, Synthetic) (Vulcanization)

NOVIKOV, A.S.

USSR

- DOGANIKIN, B. A., and TABAKOVA, Z. N., Moscow
Institute of Fine Chemical Technology (near
M. V. Lomonosov [1961 location]) - "Influence
of vulcanization structure on physical and
mechanical properties of vulcanizates"
(Session II)
- KUZ'MINSKIY, A. S., LYUBCHANSKAYA, L. I.,
FEL'DGITSYN, L. S., Scientific Research Institute
of Rubber Industry, Moscow [1960 location] -
"Influence of mechanical stresses on the ageing
of vulcanized rubbers" (Session VIII)
- NOVIKOV, A. S., GILINSKAYA, N. S., DYURAYEVA, T. N.,
GREBACHEVA, A. V., NUBEL'MAN, Z. N., and
GALIL-OGLY, F. A., Scientific Research Institute
of Rubber Industry, Moscow [1961 location] -
"Investigation of amine vulcanisation of
SKP-26 fluoroco-polymer" (Session II)
- REZNIKOVSKIY, M. M., and BROISKIY, G. I.,
Scientific Research Institute of Tire Industry,
Moscow - "Special features of the mechanism of
abrasion of high-elastic materials" (Session V)

Report to be submitted for the 4th Rubber Technology Conference,
London, England, 22-25 May 1962.

34132

S/138/62/000/002/002/009

A051/A126

11.2214
15.9206

AUTHORS: Novikov, A.S.; Galil-Ogly, F.A.; Gilinskaya, N.S.

TITLE: "Wighton A" (Vayton) type fluoro-copolymer vulcanizates, containing benzoyl peroxide

PERIODICAL: Kauchuk i rezina, no. 2, 1962, 4 - 10

TEXT: Data concerning the effects of mastication, mixing and vulcanization on the properties of rubber-like fluoro-copolymer vulcanizate peroxides of the "Wighton A" type, are derived. The fluoro-copolymer vulcanization with benzoyl peroxide is carried out in 2 steps: molding in the vulcanization press under pressure and thermostating in air without pressure. The vulcanizing action of the benzoyl peroxide is based on the removal of hydrogen atoms from the polymer chains, forming macro-radicals, and subsequent recombination of the latter, leading to the formation of a spatial lattice. Experiments revealed that in mastication and mixing on the rollers, a mechanical destruction of the molecular chains takes place in the "Wighton A" type fluoro-copolymer, forming polymer radicals which are subsequently deactivated from their interaction with compounds constituting part of the solution's composition, or they are recombined, forming

Card 1/3

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A051/A126

"Wighton A" (Vayton) type fluoro-copolymer ...

branched or partially laced structures. The first processes take place primarily at temperatures of from 20 - 30°C, the second at 60 - 80°C. The properties of the fluoro-copolymer vulcanizate peroxides depend on the mixing procedure on the rollers (polymer loading, roller temperature, space between the rollers, etc.). The mixing conditions should be kept constant in order to form vulcanizates with reproducible properties. The vulcanization of the fluoro-copolymer with the benzoyl peroxide begins at temperatures over 80°C, thus, the molding should be carried out at temperatures not exceeding 80°C. After the first stage of vulcanization of the fluoro-copolymer with the benzoyl peroxide, the vulcanizates are characterized by a sparse spatial lattice, a low tensile strength, high residual deformation in compression. The second stage of vulcanization leads to an improvement of the mechanical properties of the vulcanizate. In thermal aging of the peroxide vulcanizates, the rate of either the structuralization or destruction processes is increased, depending on the temperature and mixing. Articles made of the "Wighton A" type fluoro-copolymer, vulcanized with benzoyl peroxide, can be used over long periods of time at 250°C and for shorter periods at 300°C. There are 6 tables, 6 figures and 10 references. 2 Soviet-bloc and 8 non-Soviet-bloc. The references to the two most recent English language publications read as follows: J.G. Smith, Rubb. World, 1961, no. 1, 23.

Card 2/3

34732
3/138/62/001/002/002/009
A051/A:26

"Wighton A" (Vayton) type fluoro-copolymer ...

(1959) E. Tufts, Rubb. Age, 84, no. 6, 463 (1959)

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovy promyshlennosti - Scientific Research Institute of the Rubber Industry

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Card 3/3

419, 3
5/13/58/001/001/001/0
1051/1126

11-2214

AUTHORS: Novikov, A. G., Gali-Ogly, P. A., Glinshchik, N. S., Kabanov, V. N.

TITLE: Vulcanization of Wighton-type fluorocopolymer with hexamethylenediamine

PERIODICAL: Kauchuk i rezina, 1958, no. 3, 3-10

TEXT: Results are submitted of a study on the vul. of Wighton-type fluorocopolymer (1st and 2nd) of the Wighton-type fluorocopolymer, using hexamethylenediamine (HMDA). Work began in 1958 and was completed in 1960. In the first vul. vulcanization stage the formation kinetics of the vulcanization lattice in the copolymer and the quantity of bound amine were determined. Experiments showed that the Wighton-type fluorocopolymer vulcanizes with hexamethylenediamine at low temperatures (from 10°C); the degree of lacing increases with an increase in concentration of the hexamethylenediamine and temperature. During the vulcanization process with the hexamethylenediamine, a hydrogenfluoride salt is formed, indicating a splitting off of the HF from the polymer and the formation of double bonds in the chain. The HMDA salt decomposes, forming a free amine, in the presence of metal oxides, or under conditions allowing the dissociation of the hydrogen-

X

Card 1/3

Vulcanization of...

07/19/2001 07/19/2001
R 51/0000

fluoride salt, with HF forming from the reaction medium. The latter explains the activating action of the metal oxides on the vulcanization process of using hexamethylenediamine. A reaction scheme is recommended. In the second vulcanization stage (heating in an air thermostat at 200°C), partial destruction of the fluoropolymer with the HMDA vulcanizates takes place. The resistance to accumulation of residual deformations and the stability of other mechanical properties are increased. One of the main reasons of destruction is moisture, introduced into the mixture with the ingredients and formed in the reaction: $\text{MgO} + \text{HF} \rightarrow \text{MgF}_2 + \text{H}_2\text{O}$. The destruction process is affected by the moisture of the surrounding medium as well as by that contained in the vulcanizate proper. The HF is found further to affect the destruction of the vulcanizate in thermostatic treatment, causing a tear of the transverse bonds of the following type: ---N---(F)---N--- , which, in turn, are not acid-resistant. An increase of accumulation resistance of the fluoropolymer vulcanizates to residual deformation and stabilization of other mechanical properties during the second stage of vulcanization is explained by the elimination of moisture and volatile products when heated in air. There are 4 figures, 4 tables, 11 references: 3 Soviet-bloc and 8 non-Soviet-bloc. The reference to one of the most recent English-language publications is as follows:

Card 2/3

Vulcanization of...

S/138/02/000/003/002/001
A051/A120

A. H. Moran, R. P. Kane, J. F. Smith, Ind. Eng. Chem., 41, no. 7, 133. (1949).

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of the Rubber Industry)

Card 3/3

X

37115

S/138/62/000/004/003/008
A051/A.26

15 9/30

AUTHORS: Devirts, E.Ya.; Tomchin, L.B.; Novikov, A.S.

TITLE: The use of petroleum-polymer resin as a softener of rubber mixes

PERIODICAL: Kauchuk i rezina, no. 4, 1962, 8 - 10

TEXT: A study was made at the Scientific Research Institute of the Rubber Industry, on the possibilities of using petroleum-polymer resin as a softener in rubber mixes. The resin is a light-colored, hard substance with the following physico-chemical properties: softening temperature, 70°C; coloring according to the iodometric scale 35; aqueous extraction reaction, weakly-alkaline; solubility in benzene, complete; molecular weight, 666; unsaturation, 35.6%. Experiments showed the resin to be an equivalent to the polydienes and to supersede rubrax. CKC -30 (SKS-30)-mixes containing this resin have no tendency to scorching, and have elevated adhesive strength. The rate of vulcanization is decreased, due to the unsaturated nature of the petroleum-polymer resin, and the tear-resistance is increased. The following conclusions were drawn: the petroleum-polymer resin is a good softener for mixes of general use, based on SKS-30. When using the resin instead of the softeners usually employed, the

Card 1/2

The use of petroleum-polymer.....

S/138/62/000/004/003/008
A051/A126

adhesive strength of the mixes is improved and the mechanical properties of the rubbers improve at the same time. The petroleum-polymer resin can be used instead of colophony in mixes based on butadiene-styrene rubbers, without changing the properties of the mixes and the vulcanizates. There are 3 tables and 3 figures. X

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti
(Scientific Research Institute of the Rubber Industry)

Card 2/2

Structural transformation...

3110-0101
3110-0101

...the... 1740 cm^{-1} ...
 ...of double bonds of the type $\text{C}=\text{C}$...
 ...the region of 1600 cm^{-1} ...
 ...the infrared...
 ...the appearance of the HF_2^- ion...
 ...the appearance of a band in the 3300 cm^{-1} region...
 ...concluded that, in the first phase, the C-F and C-H bonds...

Card 2/4

Structural transformation ...

Устойчивость соединений
в процессе

ASSOCIATION: НИИ резины промышленности (Scientific Research Institute
of the Rubber Industry). Физико-химический институт
Л. Я. Карпова (Physico-chemical Institute named L. Ya.
Karпов)

SUBMITTED: March 3, 1961

Card 4/4

S/138/62/000/005/004/010
A051/A126

AUTHORS: Novikov, A.S.; Tolstukhina, P.S.; Kolesnikova, N.N.

TITLE: Creep in vulcanizates based on the Weighton A type polymer

PERIODICAL: Kauchuk i rezina, no. 5, 1962, 9 - 14

TEXT: A study was made of creep-determining processes in vulcanizates based on the Weighton A type polymer. The creep phenomenon was studied for the stationary section of the curve: deformation versus vulcanizate creep at a constant tension. The effect of number and type of transverse bonds, of temperature and fillers on the creep process, were investigated, in addition to structural changes taking place in the vulcanizates under the effect of tension and temperature. A lever-type instrument was used for the experiments and a Co^{60} source for producing radiation vulcanizates. The following general conclusions are drawn: The creep of the vulcanizates and the accumulation of true residual deformations depend on the structure of the vulcanizate, the number of transverse bonds. An increase of transverse bonds leads to a drop in the creep rate and to an accumulation of residual deformations. The creep of vulcanizates on

Card 1/2

S/133/62/005/005/004/010
A051/A126

Creep in vulcanizates based on the

the stationary section is determined by the tearing process and by restoration of the transverse bonds. The introduction of ПГ-40 (PG-40) furnace carbon black reduces the creep rate and the accumulation of residual deformations in vulcanizates based on Weighton A. The apparent activation energy of the creep process on the stationary section, for non-filled and filled amine vulcanizates is the same, indicating the similar nature of the elementary acts, responsible for the creep of vulcanizates.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

Card 2/2

8/138/62/000/008/004/007
A051/A126

AUTHORS: Devirts, E. Ya., Novikov, A. S.

TITLE: The effect of the sulfur content in indene-coumarone resin on the properties of rubber mixes

PERIODICAL: Kauchuk i rezina, no. 8, 1962, 12 - 14

TEXT: A study was made of the sulfur content in dark indene-coumarone resins complying with all the requirements of GOST 9263-59, i.e., moisture content not over 0.4%, ash not more than 1.5%, acidity or alkalinity not over 0.05%; on the properties of rubber mixes (initial plasticity, tendency to scorching, rate of vulcanization), and on vulcanizates; to identify the cause of an elevated scorching tendency in the rubber mixes. The sulfur content in the indene-coumarone resin has very little effect on the initial plasticity of standard mixes based on CKC-30 APM-15 (SKS-30 ARM-15). The former has a noticeable effect on the tensile strength and tear resistance of the vulcanizates. It has very little effect on the modulus at 200% elongation, the relative and residual elongation, the TM-2 hardness, recoil elasticity, brittleness temperature, frost-resis-

Card 1/2

S/138/62/000/008/004/007
A051/A126

The effect of the sulfur content in...

tance coefficient at -25, -35°C, temperature resistance coefficient at 100°C (for 3 days and nights), of standard mix vulcanizates based on the SKS-30 ARM-15. The conclusion follows that the quality evaluation of indene-coumarone resin should be conducted according to the sulfur content as well as the requirements of GOST 9263-59. Indene-coumarone resin intended for use in the rubber industry should not contain more than 2% general sulfur as higher quantities increase the scorching tendency, reduce the tensile strength and tear resistance. There are 2 tables and 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyslaennosti
(Scientific Research Institute of the Rubber Industry)

ard 2/2

NOVIKOV, A.S.; GALIL-OGLY, F.A.; FRADKINA, F.Ye.; SUKHOTINA, T.M.; FOMINA, L.G.

Technological properties of rubber compounds based on the ethylene-propylene synthetic rubber and technical characteristics of their vulcanizates. Kauch.i rez. 21 no.7:1-5 J1 '62. (MIRA 15:7)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Rubber, Synthetic)

TUMANOV, A.T., glav. red.; VYATKIN, A.Ye., red.; GARBAR, F.I., red.; ZAYMOVSKIY, A.S., red.; KARGIN, V.A., red.; KISHKIN, S.T., red.; KISHKINA-KATNER, S.I., doktor tekhn. nauk, red.; PANSHIN, B.I., kand. tekhn. nauk, red.; ROGOVIN, Z.A., red.; SAZHIN, N.P., red.; SKLYAROV, N.M., doktor tekhn. nauk, red.; FRIDLANDER, I.N., doktor tekhn. nauk, red.; SHUBNIKOV, A.V., red.; SHCHERBINA, V.V., doktor geol.-miner. nauk, red.; SIZUYEV, D.S., kand. tekhn. nauk, red.; GENEL', S.V., kand. tekhn. nauk, red.; VINOGRADOV, G.V., doktor khoz. nauk, red.; NOVIKOV, A.S., doktor khoz. nauk, red.; KITAYGORODSKIY, I.I., doktor tekhn. nauk, red.; ZHEREBKOV, S.K., kand. tekhn. nauk, red.; BOGATYREV, P.M., kand. tekhn. nauk, red.; SANDOMIRSKIY, D.M., D.M., kand. tekhn. nauk, red.; BUROV, S.V., kand. tekhn. nauk, red.; POTAK, Ya.M., doktor tekhn. nauk, red.; KUKIN, G.N., doktor tekhn. nauk, red.; KOVALEV, A.I., kand. tekhn. nauk, red.; YAMANOV, S.A., kand. tekhn. nauk, red.; SHEFTEL', I.A., kand. khoz. nauk, st. nauchn. red.; BABERTSYAN, A.S., inzh., nauchn. red.; BRAZHNIKOVA, Z.I., nauchn. red.; KALININA, Ye.M., mlad. red.; SOKOLOVA, V.G., red.-bibliograf; ZENTSEL'SKAYA, Ch.A., tekhn. red.

[Building materials; an encyclopedia of modern technology] Konstruktsionnye materialy; entsiklopediya sovremennoi tekhniki. Glav. red. A.T.Tumanov. Moskva, Sovetskaya entsiklopediya. Vol.1. Abliatsiya - korroziya. 1963. 416 p. (MIRA 17:3)

1. Chlen-korrespondent AN SSSR (for Kishkin).

L 13559-63

EPR/EPF(o)/ENP(j)/ENT(m)/BDS AFFTO/RPL/ASD PB-4/PC-4/

Pr-4 RM/BW/WW/JWD/H
ACCESSION NR: AP3000695

8/0190/63/005/005/0687/0692

89

AUTHOR: Lyubimov, A. N.; Novikov, A. B.; Galil-Ogly*, F. A.; Gribacheva, A. V.;
Varenik, A. F.

TITLE: The application of nuclear magnetic resonance in the study of vulcanization-
induced structural changes of copolymers containing fluorine

SOURCE: Vy*sokomolekulyarny*ye soedineniya, v. 5, no. 5, 1963, 687-692

TOPIC TAGS: nuclear magnetic resonance, vulcanization, structural changes, fluo-
rine-containing copolymers, hexamethylenediamine, MgO

ABSTRACT: The authors studied the effects of temperature, materials, and vulcani-
zation processes on the shape of fluorine and hydrogen resonance lines in rubber-
like fluorine-containing polymers of the Vaiton and Kel F-3700 type by the applica-
tion of the nuclear magnetic resonance technique. The samples under investigation
were either heated in moulds under vulcanization conditions of 270 kg/cm sup 2 at
150 to 200C, or just heated in the air at the above temperatures, as well as vul-
canized materials of the Vaiton type copolymers, obtained by a 10 minute heating at
120C, with hexamethylenediamine as vulcanizing agent and MgO as receptor of hydro-
gen fluoride. The obtained records of the absorption spectra of nuclear resonance
showed that heating as such to 150 to 200C does not cause any noticeable change in
Card 1/2

L 13550-63

ACCESSION NR: AP3000695

the shape of fluorine and hydrogen lines, while heating the samples under vulcanization conditions causes some change in the shape of the fluorine lines and a very marked one in the hydrogen lines in both copolymers, these changes being independent of the temperature. The effect of the amine vulcanization is still more pronounced as to the fluorine lines, while causing a radical change in the shape of the hydrogen resonance lines, these changes being independent of the concentration of hexamethylenediamine. The incorporation of MgO in the vulcanization compound causes a widening of the fluorine line without markedly affecting the hydrogen line. It is concluded that the observed changes may indicate the formation in the polymeric chains of C = C double bonds. Orig. art. has: 6 figures.

ASSOCIATION: Nauchno-issledovatel'skiy inatitut resinovoy promy'shlennosti (Scientific Research Institute of the Rubber Industry)

SUBMITTED: 16Oct61

DATE ACQ: 17Jun65

ENCL: 00

SUB CODE: CH

NO REF SOV: 006

OTHER: 000

Card 2/2

NOVIKOV, A.S.; KOLOSKOVA, M.V.

Use of natural mineral fillers in the rubber industry. Trudy IGEM
no.95:79-87 '63. (MIRA 16:12)

L 19608-65 EWT(m)/SPF(c)/EPR/EWP(j)/T Pc-l/Pr-l/Ps-l BSD/APWL/SSD/
APGC(b)/ESD(gs)/ESD(t)/RPL RM/WW/MLK
ACCESSION NR: AT4049856 S/0000/64/000/000/0160/0165

AUTHOR: Novikov, A. S.; Gall-Ogly*, F. A.; Slovokhotova, N. A.; Dyumayeva, T. N.

TITLE: Investigation of the vulcanization of fluorocopolymers with Schiff bases
by the method of Infrared spectroscopy

SOURCE: Khimicheskiye svoystva i modifikatsiya polimerov (Chemical properties and the modification of polymers); sbornik statey, Moscow, Izd-vo Nauka, 1964, 160-165

TOPIC TAGS: fluorocopolymer, vulcanization, infrared spectroscopy, vulcanizing agent, rubber aging, Schiff base, hexafluoropropylene copolymer, vinylidene fluoride copolymer

ABSTRACT: Structural changes in a copolymer of hexafluoropropylene and vinylidene fluoride during vulcanization with Schiff bases were investigated by the method of infrared spectroscopy. The copolymer was press-vulcanized at 100-200C for 30 min. In addition, rubbers were aged in a thermostat with air circulation at 200C for 48 hrs. The nature of the structural changes was judged from changes in the infrared absorption spectra, measured with an IKS-14 instrument using NaCl and LiF prisms. The vulcanizing agent was bis-benzalhexamethylenediamine. Vulcanization at 70-120C was accompanied by a decrease in intensity of absorption at 1655 cm⁻¹, which is characteristic for valence oscillations of the >C=N-bonds, and by an increase

Card 173

L 19608-65

ACCESSION NR: AT4049856

In intensity of absorption at 1705 cm^{-1} . After vulcanization, there were no absorption bands characteristic for C=N-bonds, while absorption at 1705 cm^{-1} was much more intensive. Addition of 90 during vulcanization at 150C does not change the nature of the spectrum in the range of $1500-1800\text{ cm}^{-1}$; however, at 200C , a broad intensive band was observed in the region of $1620-1640\text{ cm}^{-1}$, which pertains to conjugated double bonds. The following vulcanization mechanism is suggested: 1) Partial hydrolysis of the Schiff base under the influence of moisture; 2) Reaction of hexamethylenediamine with the fluorocopolymer with the formation of double bonds in the polymer; 3) Addition of the Schiff base to the double bonds of the fluorocopolymer, which leads to the cross-linking of the polymer chains along two possible paths: (a) addition of bis-benzalhexamethylenediamine to individual double bonds in the copolymer, or (b) addition of bis-benzalhexamethylenediamine to the system of conjugated double bonds in the chain. The increased stability of rubbers vulcanized with Schiff bases, compared with hexamethylenediamine, is explained by the greater thermostability of transverse bonds of the C-N type in comparison with C=N. Orig. art. has: 3 figures, 1 table and 4 chemical equations.

ASSOCIATION: Fiziko-khimicheskiy Institut Im. L. Ya. Karpova (Physico-Chemical Institute)

Card 2/3

L 19608-65

ACCESSION NR: AT4049856

SUBMITTED: 16Oct62

ENCL: 00

SUB CODE: OC, MT

NO REF SOV: 002

OTHER: 005

Card 3/3

L 19708-65 EWT(m)/EFF(c)/EPR/EWP(j)/T Pc-l/Pr-l/Ps-l WW/RM
ACCESSION NR: AP5001500 8/0138/64/000/012/0007/0012

AUTHOR: Gilinskaya, N. S.; Galil-Ogly, F. A.; Gubay, G. A.;
Novikov, A. S.

TITLE: Reaction of fluorocarbon elastomers of the Kel-F and Viton types and their vulcanizates with inorganic acids

SOURCE: Kauchuk i rezina, no. 12, 1964, 7-12

TOPIC TAGS: fluorocarbon elastomer, fluorocarbon elastomer vulcanizate, Kel F, Viton, nitric acid

ABSTRACT: The effect of nitric acid on the structure and properties of elastomers of the Soviet Kel-F and Viton types and their vulcanizates has been studied. The experiments were conducted at room temperature with specimens 0.5—1.0 mm thick, both while the specimens were in the swollen state and after removal of the acid from the specimens. Changes in the structure and properties of raw elastomers treated with HNO₃ for 1—40 days were evaluated by viscosimetry, IR spectroscopy, and changes in the physicomechanical properties. It was shown that swelling of raw elastomers in nitric acid almost reversibly

Card 1/3

I 19708-65

ACCESSION NR: AP5001500

lowers their tensile strength and increases their elongation. Treatment of raw elastomers with HNO_3 for 40 days did not affect the properties and network structures of vulcanizates. Swelling of raw elastomers in HNO_3 did not give rise to polymer chain degradation or to appreciable structural changes. Changes in the structure and properties of fluorocarbon vulcanizates were determined from equilibrium swelling and changes in physicochemical properties. The experiments were conducted with unfilled and filled vulcanizates prepared with different vulcanizers and treated with HNO_3 for 24 and 72 hr, respectively. It was shown that the highest resistance to HNO_3 is inhibited by silica-filled peroxide vulcanizates (with C-C crosslines). After removal of the acid, the physicochemical properties of these vulcanizates are fully restored and their network density remains almost unchanged, while the strength and network density of vulcanizates prepared with other vulcanizers, such as Schiff's bases or chelate compounds, drops after treatment with and removal of HNO_3 . Orig. art. has: 1 figure and 6 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

Card 2/3

1. 19708-65

ACCESSION NR: AP5001500

SUBMITTED: 00

ENCL: 00

SUB CODE: MT, GC

NO REF SOV: 005

OTHER: 007

ATD PRESS: 3160

Card 3/3

ACCESSION NR: AP4038907

S/0138/64/000/005/0008/0014

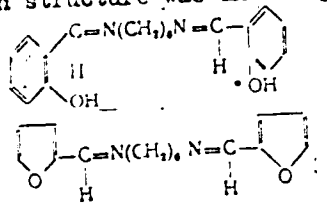
AUTHORS: Novikov, A. S.; Tolstukhina, F. S.; Kolesnikova, N. N.

TITLE: Creep in vulcanized rubber SKF-26

SOURCE: Kauchuk i rezina, no. 5, 1964, 8-14

TOPIC TAGS: vulcanized rubber, relative deformation, argon, creep process, oxygen concentration, rubber SKF 26

ABSTRACT: The effect of air and argon on SKF-26 vulcanized rubber creep with various vulcanization bonds and identical molecular chain structure was investigated. The types of vulcanized rubbers tested were: types GMDA



tin diethyldithiocarbamate, and benzoyl peroxide. Relative deformation versus time curves were obtained for all rubber specimens at various temperatures (180-260C) both in air and in argon. The results show a significant decrease in the actual
Card 1/2

ACCESSION NR: AP4038907

residual deformation rate slopes and consequently, in creep rate, the decrease being five times as much in argon as in air. The apparent activation energy E_a of the creep process in rubber is calculated. For GMDA type 1 rubber, $E_a = 14.6$ kcal/mol in air, and 15.4 in argon. The closeness of these two values indicates an identical creep process in air and in argon. The greater decrease in creep rate in argon, as compared to air, seems to be caused by an oxygen concentration effect. E_a measurements also indicate that the most stable vulcanized rubber, with $E_a = 30$, is the C-C-bond in the peroxide specimen and that the least stable is the GMDA specimen. Orig. art. has: 8 figures, 3 tables, and 1 formula.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promy'shlennosti
(Scientific Research Institute of the Rubber Industry)

SUBMITTED: 00

DATE ACQ: 05Jun64

ENCL: 00

SUB CODE: MT

NO REF SOV: 004

OTHER: 001

Card 2/2

L 2553-66 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5024103

32 UR/0138/65/000/009/0002/0006

29 678.743.31-134.341:678.028

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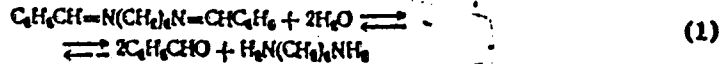
AUTHOR: Gilinskaya, N. S.; Galil-Ogly, F. A.; Nudel'man, Z. N.; Novikov, A. S.

TITLE: Vulcanization of the SKF-26 Fluorocarbon copolymer by Schiff bases

SOURCE: Kauchuk i rezina, no. 9, 1965, 2-6

TOPIC TAGS: fluorocarbon copolymer, vulcanization, Schiff base

ABSTRACT: A study has been made of the vulcanization mechanism of the SKF-26 fluorocarbon copolymer by Schiff bases. Unfilled SKF-26 rubber mixtures with or without MgO were used. N,N'-dibenzylidene-1,6-hexanediamine (I)—the condensation product of benzaldehyde and hexamethylenediamine (II)—was used as the vulcanizing agent. It was shown that the vulcanization kinetics of SKF-26 by Schiff bases differs from that by free diamines. Since initiation of the copolymer cross-linking by I requires the presence of moisture, the following vulcanization mechanism was suggested:

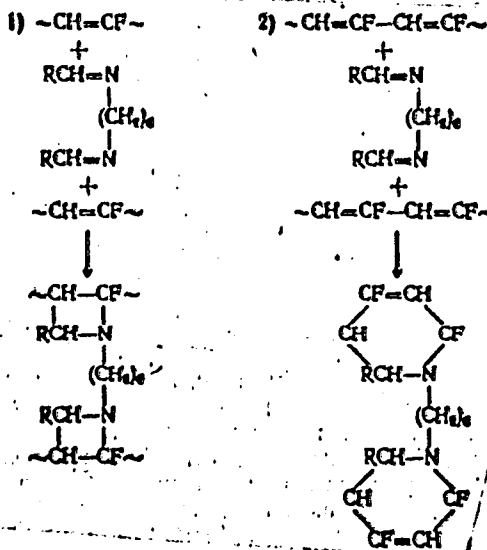
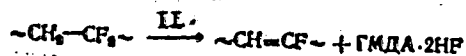


Card 1/3

L 2553-66

ACCESSION NR: AP5024103

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(2)



(3)

Card 2/3

L 2553-66

ACCESSION NR: AP5024103

3

In contrast to vulcanizates made with free diamines which contain C = N cross-links, vulcanizates made with Schiff bases contain C-N cross-links which are more stable and improve the properties of vulcanizates. Orig. art. has: 4 figures and 2 tables. [80]

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry) *11455*

SUBMITTED: 00

ENCL: 00

SUB CODE: GC, ME

NO REF SOV: 002

OTHER: 007

ATD PRESS: *418*

Card *3/3*

SOB LOV, L.I.; DOWING, A.D.

Material in this report is based on information received from
Bradt in the form of a letter of introduction. No other information is
biol.nauki no.4:38-40, 1967. (MIRA 18:10)

1. Rekomendovaniye doktora L.I. Soblovu na kandidatevskoye
znaneniye im. M.V. Lomonosova.

ACC NR: AM6036881

Monograph

UR/

Galil-Ogly, Faina Akimovna; Novikov, Aleksandr Sergeyevich; Rudel'man, Zinoviy Naumovich

Fluorocarbon rubbers and their vulcanizates (Ftorkauchuki i reziny na ikh osnove) Moscow, Izd-vo "Khimiya", 1966. 234 p. illus., biblio., index., tables. 4000 copies printed.

TOPIC TAGS: fluorocarbon, vulcanization, polymer

PURPOSE AND COVERAGE: The book describes the properties of fluorocarbon rubbers, formulations of rubber mixtures, processing of the rubber, and fields of their application. It discusses chemical processes in fluorocarbon rubbers at high temperatures and in the course of their vulcanization. The book is intended for scientific workers, engineers and technicians of the chemical, petroleum, automotive and defense industries. There are 72 Soviet World and 494 Western references. The references are given at the end of individual chapters.

TABLE OF CONTENTS:

Foreword -- 5

Introduction -- 7

Card 1/2

UDC: 678.743

ACC NR: AM6036881

Fluorine, organofluorine compounds -- 8

Part I. General Characteristic of Fluorocarbon Rubbers

- Ch. 1. Polymers and copolymers of fluorine-substituted dienes -- 17
- Ch. 2. Polymers and copolymers of fluorine-containing ethers and esters -- 32
- Ch. 3. Elastomers with heterocyclic atoms in the backbone -- 46
- Ch. 4. Fluorine-containing polyolefins -- 58

Part II. Fluorocarbon Rubbers - Copolymers of Vinylidene Chloride with Hexafluoropropene or Chlorotrifluoroethylene

- Ch. 5. Properties and structure of fluorocarbon rubbers -- 79
- Ch. 6. Effect of high temperatures and ionizing radiation on structural changes in fluorocarbon rubbers -- 91
- Ch. 7. Methods and mechanisms of the vulcanization of fluorocarbon rubbers -- 114
- Ch. 8. Ingredients and formulation principles of fluorocarbon rubber mixtures -- 150
- Ch. 9. Processing methods of fluorocarbon rubbers to products -- 176
- Ch. 10. Properties of fluorocarbon rubber vulcanizates -- 185
- Ch. 11. Application of fluorocarbon rubber vulcanizates -- 217

Subject Index -- 226

SUB CODE: 11,07/

SUBM DATE: 26Apr66/

ORIG REF: 076/

OTH REF: 432/

Card 2/2

NOVIKOV, A.T.

The Patient's Capacity for Work after Myocardial Infarction

A. T. Novikov. (Klin. Med. (Mosk.)) 32, 67-74, May, 1954.

The outlook for patients with myocardial infarction has improved greatly in recent years. Thus Gelstein has reported a decrease in mortality from 27% in 1945-6 to 15% in 1949. In the present communication the author reviews 171 cases treated between 1945 and 1952 (including 12 patients treated before 1945 who were re-admitted in a second attack or for symptoms of chronic coronary insufficiency). The patients, who were all men engaged in intellectual work and subjected to frequent mental strain, were divided into three groups: (1) 107 whose illness has been followed over a number of years; (2) 29 whose capacity for work was assessed only on discharge from hospital and who had since left for other districts; and (3) 35 who died during the period under review.

Of those in Group 1, 87 were found capable of work for varying periods, this figure representing 51% of the total number of patients and 81% of the group. As to age, 9 of them were between 36 and 40, 48 between 41 and 50, 29 between 51 and 60, and one was over 60. Full office hours of work were resumed by 69 of them, while only 18 had to give up work, as had 3 of the short-time workers. Half of the whole group had been treated with strict rest in bed for 6 weeks and one-quarter for 8 weeks, and 71 of them had 2 months or more of treatment at home or in hospital and 3 months or more in a convalescent home.

Of the patients in Group 2, 15 were found to be capable of work and 14 incapable. The latter included 8 with septal infarcts which involved also the anterior or anterolateral wall, while the remaining 6 had infarction of the anterior, posterior, or antero-lateral walls without septal involvement; 11 of these patients had had anginal attacks before their infarction for periods varying from 2 to 9 years. On discharge from hospital these attacks continued and there was also evidence of cardiovascular insufficiency of the first or

(over

second degree; 4 of the patients had aneurysm of the left ventricle. Among the 15 found capable of work there were none with infarcts involving the septum; in 9 cases the infarct was in the anterior wall, in 5 in the posterior wall, and in one in the antero-lateral wall. The myocardial damage was less extensive and less severe than in the 14 incapacitated patients.

Of the 35 patients in Group 3, 13 died after the first infarct, 21 after a second infarct, and one after a third. In 13 cases death occurred in the first 3 days of the illness, in 7 between the 8th and 13th days, in 11 after 4 to 12 months, and in 4 cases after 2 to 3 years. The highest number of deaths occurred among patients with infarction of the anterior wall with septal involvement (11), and of both the anterior and posterior walls with septal involvement (12).

The author concludes that the prospect of returning to work is poor (1) in cases with a history of frequent anginal attacks before the infarction; (2) in those with frequent anginal attacks after infarction or with evidence of cardiovascular insufficiency; and (3) in those with septal involvement. Strangely enough, ventricular aneurysm is, in his experience, not necessarily a contra-indication to resumption of work. In those with limited capacity the working time should not exceed 6 hours per day. L. Firman-Edwards

SO: Abstracts of World Medicine, Vol. 16, No. 6

NOVIKOV, A.T., kandidat meditsinskikh nauk (Moskva); PEROV, S.A., (Moskva)

Clinical peculiarities and course of recurrent myocardial
infarct. Klin. med. 34 no.1:42-45 Ja '56. (MLRA 95)

(MYOCARDIAL INFARCT
recurrent, clin. aspects)

NOVIKOV, A. T.

EXCERPTA MEDICA Sec.3 Vol.11/5 Endocrinology May 57

887. NOVIKOV A. T. Moscow. *Lechenie sakharnogo diabeta u bonykh s narusheniyami serdechno-sosudistoi systemy. Treatment of diabetes mellitus in patients with cardiovascular disorders KLIN. MED. (Mosk.) 1956, 34/4 (51-56)

Treatment of patients with diabetes mellitus, who also have hypertensive disease or coronary atherosclerosis, with insulin in conjunction with a physiological diet rich in carbohydrates, does not affect the coronary circulation adversely. On the contrary, the removal of diabetic decompensation tends to ameliorate the course of hypertensive disease and of coronary-cardiac sclerosis. It is the hypoglycaemia and not insulin as such that is the harmful factor for such patients. To avoid hypoglycaemia administration of insulin in divided doses (3 times a day) is recommended, as well as correct distribution of carbohydrate intake. Raskin - Leningrad

NOVIKOV, A.T., kand. med. nauk, polkovnik med. sluzhby

Diagnostic errors in pneumonia. Voen. med. zhur. no.1:18-23 Ja '57
(PNEUMONIA, differential diagnosis, (MIRA 12:7)
errors (Rus))

NOVIKOV, A.T., polkovnik med. sluzhby, kand. med. nauk

Results of the treatment of peptic ulcer and the prevention of its
recurrence. Voen.-med. zhur no.5:22-31 My '57 (MIRA 12:7)

(PEPTIC ULCER, therapy,
results of ther. & prev. of recur. (Rus))

NOVIKOV, A.T., polkovnik med. sluzhby, kand. med. nauk

Some current problems in military field therapy. Voen.-med. zhur.
no.6:3-9 Je '58. (MIRA 12:7)

(MEDICINE, MILITARY AND NAVAL

in Russia, problems in military field ther. (rus))

NOVIKOV, A.T., kand. med. nauk, polkovnik med. sluzhby

First All-Russian Congress of Therapeutists. Voen. med. zhur.
no.2:88-92 P 159. (MIRA 12:7)
(MEDICINE--CONGRESSES)

NOVIKOV, A.T., kand.med.nauk (Moskva)

Use of hormones from the adrenal cortex and the anterior lobe of the
pituitary in some diseases. Med. sestra 20 no.10:49-53 0 '61.

(MLA 14:12)

(ADRENOCORTICAL HORMONES)

(PITUITARY HORMONES)

NOVIKOV, A.V., TSYBIN, M.I.

TRANSACTIONS OF THE INSTITUTE OF NUCLEAR PHYSICS (TRUDY INSTITUTA
YADERNOY FIZ IKI) of the KAZAKH Academy of Sciences, Volume 2, by
Different authors, Kazakh Academy of Science Publishing House
ALMA-ATA, USSR, 1959.

Concerning the electric resistance temperature coefficient of
Manganin type alloys.

PRESNYAKOV, A.A., NOVIKOV, A.V.

TRANSACTIONS OF THE INSTITUTE OF NUCLEAR PHYSICS (TRUDY INSTITUTA YADERNY FIZ IKI) of the KAZAKH Academy of Sciences, Volume 2, by Different authors, Kazakh Academy of Science Publishing House ALMA-ATA, USSR, 1959.

Study of the mechanical properties of tin bronzes with additions of Zn, P, Pb and Ni.

1. Investigating the microhardness of tin bronzes.
2. Change of plasticity and strength of tin bronzes with additions of P, Zn, Ni and Pb under static load.
3. On the aging of tin phosphorus and tin zinc lead bronzes.

PRESNYAKOV, A.A.; NOVIKOV, A.V.

Investigation of the mechanical properties of tin bronzes with
small amounts of zinc, phosphorus, lead, and nickel. Trudy Inst.
iad. AN Kazakh. SSR 2:41-73 '59. (MIRA 13:3)
(Bronze)

NOVIKOV, A.V.; TSYPIN, M.I.

Temperature coefficient of electrical resistance of alloys of the
manganin type. Trudy Inst. iad. fiz. AN Kazakh. SSR 2:119-123 '59.
(MIRA 13:3)

(Copper-manganese-nickel alloys--Electric properties)

NOVIKOV, A.V.; TSYPIN, M.I.; FRIDMAN, L.P.

Liquation phenomena in ingots of OTsS 4-4-2,5 bronze. Trudy Inst.
iad. fiz. AN Kazakh. SSR 2:151-152 '59. (MIRA 13:3)
(Bronze)

SOV/136-59-6-15/24

AUTHORS: Novikov, A.V. and Presnyakov, A.A.

TITLE: The Ageing of Bronzes BrOF6.5-0.15 and BrOTsS4-4-2.5
(O starenii bronz BrOF6.5-0.15 i BrOTsS4-4-2.5)

PERIODICAL: Tsvetnyye metally, 1959, Nr 6, pp 79 - 83 (USSR)

ABSTRACT: There are many difficulties in rolling tin-phosphorus and tin-zinc-lead bronzes. The main cause of the high scrap is cracking of the ingots. The two bronzes were investigated by casting into moulds of cast iron, copper and water-cooled copper. Cracking normally occurs after the first or second roll on the bottom and edges of the ingots giving a characteristic parabolic boundary between the cracked and non-cracked parts (Figure 1). Figure 2 shows the plastic deformation of BrOTsS4-4-2.5 with different degrees of deformation. The highest plasticity is shown initially by the metal from the water-cooled mould. With greater degrees of deformation copper and then cast-iron moulds give better results. This is connected with the greater degree of ageing during deformation of the more sharply cooled metal. Figure 3 shows the influence of the degree of deformation on cold-worked and annealed samples. The

Card1/3

The Ageing of Bronzes BrOF6.5-0.15 and BrOTsS4-4-2.5 ^{SOV/136-59-6-15/24}

highest plasticity is shown by the metal from the cast-iron mould. The plasticity of the metal from the water-cooled copper mould decreases sharply with increase in the degree of preliminary deformation. Figure 4 shows that annealing decreases the hardness in the interval 500-800 °C. Figure 5 shows the mechanical properties of the bronze BrOTsS4-4-2.5 during production, which confirms the above results. It is interesting to note that cracking is observed during the first and second rolls only which confirms the theory that it is connected with ageing. The two bronzes BrOF6.5-0.15 and BrOTsS4-4-2.5 were homogenised at 700 °C for 48 hours and quenched in water. Samples were aged at 200 °C, some for one hour and some for 72 hours and then deformed by rolling. Specimens were prepared from the rolled strip and tested on an impact machine. Results are given in Figure 6. For BrOTsS4-4-2.5 the highest plasticity is shown in the quenched condition. For BrOF6.5-0.15 the samples aged for one hour have very small

Card 2/3

The Ageing of Bronzes BrOF6.5-0.15 and BrOTsS4-4-2.5 ^{SOV/136-59-6-15/24}

plasticity. After ageing for 72 hours the properties are fully recovered. Ageing BrOTsS4-4-2.5 results in a decrease in plasticity. Thus, the rate of precipitation in BrOF6.5-0.15 is much higher than in BrOTsS4-4-2.5. There are 6 figures and 4 Soviet references.

Card 3/3

PRESNYAKOV, A.A.; CHERVYAKOVA, V.V.; NOVIKOV, A.V.; KLYUCHNIKOV, Yu.F.

Role of lead in leaded brass. TSvet. met. 33 no.7:77-81 J1 '60.
(Brass--Metallurgy) (Lead)

YEMEL'YANOV, V.I.; ZAKHAROV, N.F., dots., otv. red.; NOVIKOV, A.V.,
red.

[Technical and economic calculations in technological
processes; methodology and exercises] Tekhniko-ekonomicheskie
raschety v tekhnologicheskikh protsessakh; metodika i up-
razhneniia. Rostov-na-Donu, Izd-vo Rostovskogo univ., 1961.
223 p. (MIRA 18:5)

PRESNYAKOV, A.A.; CHERVYAKOVA, V.V.; NOVIKOV, A.V.; BASINA, A.N.

Possibility of hot rolling LS63-1 brass. TSvet. met. 35 no.1:
78-80 Ja '62. (MIRA 16:7)
(Rolling (Metalwork)) (Brass)

PRESNYAKOV, A.A.; CHERVYAKOVA, V.V.; NOVIKOV, A.V.; FRIDMAN, L.P.

Optimum procedure for the hot working of LS59-1 brass. TSvet.
met. 35 no.8:82-83 Ag '62. (MKA 15:8)
(Brass) (Rolling (Metalwork))

NOVIKOV, A.V.; PRISHYAKOV, A.A.; CHERNYAKOVA, V.V.

Investigating the aging process in 1364-2 alloys containing silicon
by the microhardness method. Trudy Inst. met. i obog. AN Kazakh.
SSR 7:96-100 '63. (MIRA 17:6)

NOVIKOV, A.V.; CHERVYAKOVA, V.V.; FRIEDMAN, L.F.

Effect of complex additives on the usefulness of LS59-1 brass.

Trudy Inst. met. i obog. AN Kazakh. SSR 7:101-104 '63.

(MIRA 17:6)

BOISEMALIEV, U.A.; NOVIKOV, A.V.; SHCHERBAKOV, V.V.; FRIDMAN, L.P.

Increasing the technical and economic indices in the rolling of
LS9-1 brass with complex additives in industrial conditions.
Trudy Inst. met. i obog. AN Kazakh. Ser. 7:105-111 '63.

1963

ACCESSION NR: AP4029708

S/0136/64/000/004/0073/0074

AUTHORS: Novikov, A.V.; Chervyakova, V.V.; Presnyakov, A.A.

TITLE: Plasticity of LS59-1-Type Brass at High Temperatures

SOURCE: Tsvetny*ye metally*, no. 4, 1964, 73-74

TOPIC TAGS: brass, plasticity, elongation, area reduction, deformation, micro structure, zinc, lead, nickel, alloy

ABSTRACT: The investigation of "LS59-1" brass specimens showed that after deformation and annealing, the plasticity of a cast alloy always increases resulting in a general expansion of the temperature range of deformability. Specimens contained 57.3% Cu; 0.9% Pb; 0.45% Ni; 0.18% Si; 0.22% Mn and Zn. Electrolytic "MO" type copper, "TsB" type zinc and "Cl" type lead were used as charge materials in a low-frequency induction furnace. An alloy specimen annealed after cold deformation showed a considerable increase in performance figures at 500-600C and a sharp drop in elongation within the 700 to 800C temperature range. Microanalysis showed that deformation and annealing affect the decomposition of solid solutions and that a

Card 1/2

ACCESSION NR: AP4029708

new phase -- an intermetallic compound - forms from the additives and lead. Lead extraction and the formation of a new finely dispersed phase which is uniformly distributed in the alloy enhances the plasticity of $\alpha+\beta$ brass at 500 to 600C. At 700-800C plasticity depends upon the intensity of diffusion processes. Evidently, in an alloy submitted to cold deformation which has a great reserve of free energy, the diffusion processes occur with a higher intensity in comparison to processes in annealed alloys. That accounts for the increased plasticity within the 700 to 850C range observed during the extension of metal submitted to cold deformation. Changes in the initial state of the alloy affects the transformation processes and may result in different changes of plasticity within the temperature range of hot deformation. The orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 00

DATE ACQ: 30Apr64

ENCL: 00

SUB CODE: ML

NR REF SOV: 005

OTHER: 001

Card 2/2

L 6893-65 EWT(m)/EWP(q)/EWP(b) ASD(d)/ASD(m)-3/SSD/AFWL/ASD(f)/RAEM(t) JD/
ACCESSION NR: AR4044223 MJW S/0137/64/000/006/1054/1054

SOURCE: Ref. zh. Metallurgiya, Abs. 6I314

53

AUTHOR: Novikov, A. V.; Chervyakova, V. V.

TITLE: The influence of deformation and annealing on the plasticity of brass
LS59-1 at high temperatures

CITED SOURCE: Tr. In-ta metallurgii i obogashcheniya. AN KazSSR, v. 10, 1964, 3-6

TOPIC TAGS: brass, plasticity, deformation, annealing, cast alloy, hot working

TRANSLATION: In the search for methods of increasing the technological properties of LS59-1 brass during hot working of cast alloys, there was investigated the influence on their plasticity (δ) of the following conditions of preliminary deformation and annealing: 1) 10% work hardening; 2) 10% cold deformation plus annealing for 4 hours at 600°; 3) 10% hot deformation with subsequent 4 hour annealing at 600°. Along with determination of δ (in the interval 500-800°) there were conducted microstructure investigations of samples in the initial state at 20°. The magnitude δ of the alloy LS59-1, depending on the temperature,

Card 1/2

L 6693-65

ACCESSION NR: AR4044223

changes along a complex curve with two maxima. Working under condition 1 increases δ in the region of the 1st, and especially the 2nd, maximum and expands the temperature boundaries of the zone determined by this maximum. Here the total width of the interval of deformability (at δ 60%) does not change, due to simultaneous lowering of δ in the region 500-600°. Samples under conditions 2 give a considerable increase in δ at 500-600°, while in the interval 700-800° δ of the alloy sharply drops due to disappearance of the 2nd peak on the curve of the temperature dependence of δ . Working under condition 3 lowers δ and sharply narrows its interval as a result of a significant decrease of δ in the region 700-800°. During working under condition 4, δ changes along a curve having one maximum at a temperature of ~700°. The interval of deformability in this case decreases due to the absence of a 2nd peak. The influence of these conditions of working on δ of IS59-1 brass is explained by the influence of the initial state of the alloy on the development of transformations occurring in the alloy in definite temperature ranges: at 400-500° $\beta \rightarrow \alpha$, at 600-700° $\alpha \rightarrow \beta$; at higher temperatures there occurs a transformation in the β -phase.

SUB CODE: MM, ME

ENCL: 00

Card 2/2

PRESNYAKOV, A.A.; CHERVYAKOVA, V.V.; POLYAKOVA, T.P.; NOVIKOV, A.V.; VOLEYNIK,
S.N.; BAIMBETOV, N.B.

Investigating the properties of plain and lead α -brass. Trudy Inst.
met. i obog. AN Kazakh. SSR 10:25-31 '64. (MIRA 18:7)

NOVIKOV, A.V.
1953, 24

Repairing gages. Stan. 1 instr. 24 no.6:35 Je '53.

(Slide 6:7)
(Gauges)

SOV/102-58-4-8/11

AUTHORS: Novikov, A.V. and Nedavniy, V.S.

TITLE: A Fast Servo with an Electromagnetic Friction Clutch

PERIODICAL: Avtomatika, 1958, Nr 4, pp 67-73 (Ukr.SSR)

ABSTRACT: A simplified circuit is shown in Fig 1; the unbalance signal from a potentiometer bridge is amplified and operates a relay, which controls the clutch coupled to the motor that drives the potentiometer. There are three negative feedback loops, one a rate feedback, the second an internal feedback in the chopper amplifier, and the third a feedback from the output of this amplifier to the input of the magnetic amplifier. A low-frequency amplifier and phase-sensitive detector come between these two amplifiers. A constant-speed motor drives the potentiometer. The second and third pages of the paper give the usual equations of motion, etc; the roots of the characteristic equation are negative and real. Fig 4 shows the frequency characteristics for various values of τ (response time of the clutch) and ω (speed); it is concluded that the steady state is not stable (that hunting will occur) unless $\omega = 0$, or unless the dead zone is made fairly wide; this is possible

Card 1/2

SOV/102-58-4-8/11

A Fast Servo with an Electromagnetic Friction Clutch

while retaining a reasonable accuracy. The next section
(pp 70-72) deals with the transient response, which is
Card 2/2 illustrated by Figs 5 and 6. Experimental results (not
shown) indicate that the theory is reasonably correct.
There are 6 figures and 1 Ukrainian reference.

ASSOCIATION: Derzhavnyy mashynobudivnyy zavod
(State Machine Construction Works)

SUBMITTED: February 16, 1958

SOV/143-53-1-11/17

3(2)
AUTHOR:

Postnikov, I.V. Candidate of Technical Sciences, Professor,
and Novikov, A.V. Candidate of Technical Sciences

TITLE:

Determination of Economical Dimensions for Transformers
(Opredele niye ekonomicheskikh razmerov v transformatorakh)

PERIODICAL:

Izvestiya vysshego tekhnicheskogo uchebnogo zavesheniya - Energetika,
1959, Nr 1, pp 70-81

ABSTRACT:

Economical dimensions of transformers are such dimensions as ensure the minimum manufacturing and operational cost, considering the specified electrical requirements and the established electrical, mechanical and thermal standards. To simplify the problem, the authors investigate only a few of the numerous cost-determining factors and conditions referring to the power and cost equations, permitting the line of geometrical factors that corresponds to the minimum cost of the construction

$$\alpha = \frac{1.5}{\dots} \text{ and } \lambda = \frac{1.5}{20}$$

Card 1/3

where l_0 - width of core, w - height of core and i =

SOV/142-53-1-11/17

Determination of economical dimensions for transformers

diameter. It is proposed to investigate the influence on the cost of a transformer of the total copper and core losses $\Sigma P\%$ and their ratio

$$k = \frac{P_{Cu}}{P_{Fe}}$$

at any specified short-circuit voltage U_k and at the short-circuit voltage U_k at any specified $\Sigma P\%$ and k . The computational results in the article show in particular that the minimum cost is arrived at with $k = 3$ to 4 and that the cost of a transformer is higher with U_k reduced. There exist certain optimum values $\Sigma P\%$ and k that ensure the minimum material and operating cost of transformers, and their determination is an important economical task. See also 4 diagrams and 4 Soviet references.

Card 2/3

Determination of ... 7/19/83-1-11/17

ASSOCIATION: Kiyevskiy ... Institute
(Kiev, ... Institute)

PRESENTED: By the ... (Chair of
Electrical ...)

SUBMITTED: November 2, 1983

Card 3/3

POSTNIKOV, I.M.; NOVIKOV, A.V.

Asynchronous moment, created by the excitation winding closed at the capacitance in a synchronous machine. Nauch.dokl.vys.shkoly; elektromekh. i avtom. no.1:89-92 '59. (MIRA 12:11)

1. Rekomendovana kafedroy elektricheskikh mashin Kiyevskogo ordena Lenina politekhnicheskogo instituta.

(Electronic machinery, Synchronous)

GUMANYUK, M.N., inzh.; NOVIKOV, A.V., inzh.

Magnetoelastic method for regulating the pressure of pulp in
pulp conduits. Ugol'.prom. no.3:52-55 My-Je '62. (MIRA 18:3)

1. Institut avtomatiki Gosplana UkrSSR.

GUMANYUK, M. N.; NOVIKOV, A. V.

Magnetoelastic manometer for controlling the pressure of pulps
and suspensions. Priborostroenie no.10:26-27 0 '62.
(MIRA 15:10)

(Manometer)

I 41637-65 EWT(d)/EFF(n)-2/EMF(v)/EWP(k)/EWP(h)/EWP(l) Po-4/Pq-4/Pf-4/
Pg-4/Pao-2/Pu-4/Pk-4/Pl-4 IJP(c) WN/BC

ACCESSION NR: AP5011298

UR/0102/65/000/001/0020/0025

62
60
B

AUTHOR: ~~Novikov, A. V.~~ V. (Novikov, A. V.) (Kiev) ; Nedavniy, V.S. (Kiev)

TITLE: Grapho-analytical method of plotting the curve of the transient process in an automatic-control system having a digital computer in its closed loop

SOURCE: Avtomatyka, ¹⁰no. 1, 1965, 20-25

TOPIC TAGS: automatic control, ¹⁴automatic control design, automatic control system, automatic control theory

ABSTRACT: Generally, the investigation of an automatic-control system that has a digital computer in its closed loop (ACSC) requires complicated methods involving the theory of sampled-data systems and the Z- and W-transformation apparatus. By treating the ACSC as a closed relay-type system, where the digital computer represents the relay element and where the continuous part of the system is linear, a simple grapho-analytical method for plotting the transient-

Card 1/2

L 24537-65

ACCESSION NR: AP5011298

2

response curve has been developed. This method permits studying the transients in digital servo systems, representable by the ACSC, by simple means avoiding complicated mathematical techniques. Moreover, the possibility opens for developing further methods of studying digital servos, which in certain aspects are similar to the methods of investigation of relay-type automatic-control systems. "S. Yu. Dem'yakhov's'ka and O. I. Dergach took part in the calculations involved." Orig. art. has: 5 figures and 4 formulas.

ASSOCIATION: none

SUBMITTED: 18Oct63

ENCL: 00

SUB CODE: IE

NO REF SOV: 007

OTHER: 000

Card 2/2

NOVIKOV, A.V.

L 54679-65 EWT(1)/EEC(b)-2/EWA(h) Pm-4/Po-4/Pq-4/Pg-4/Peb/PL-4
ACCESSION NR: AP5011304 UR/0102/65/000/001/0085/0088

AUTHOR: ~~Novykov, V. S.~~ (Kiev); Novykov, V. S. (Kiev)

3/B

TITLE: Determining reliability of automatic systems

SOURCE: Avtomatyka, no. 1, 1965, 85-88

TOPIC TAGS: system reliability, automatic system reliability

ABSTRACT: The required reliability of automatic systems servicing a certain flow of demands is considered in this short article. The necessity for correct operation of such a system arises each time the system (e.g., an airport landing equipment) is called upon to operate. The system is regarded as a mass-servicing system, and the input information as a flow of demands. Based on L. Takacz's work (Acta Math. Hung., Budapest, 1955), a formula for the average time to failure (9) is derived. Orig. art. has: 2 figures and 13 formulas.

ASSOCIATION: none

SUBMITTED: 22Feb64

ENCL: 00

SUB CODE: DP, AG

NO REF SOV: 000

OTHER: 001

Card 1/1