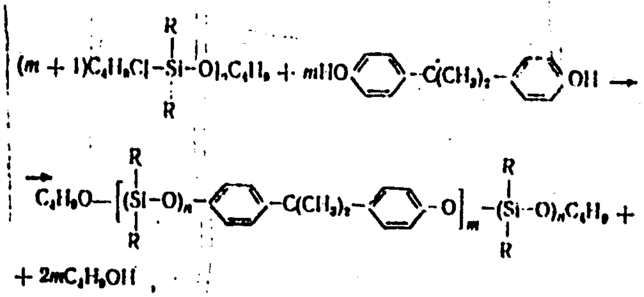
ACCESSION NR: AP4035102

butoxy groups are also on the side chain of the organosilicon polymer, the product will contain the diane group in each link of the polymer chain. The composition and properties of the end products are determined by the molecular ratio of the reagents. With a 1:1 ratio of diane: α ,ω-dibutoxypolydimethylsiloxane a linear polymer is formed with blocks of the organosilicon molecules joined by the diane: $[-(SiR_2O)_nC_6H_4C(CH_3)_2C_6H_4O-]$



where R = CH_3 or C_6H_3.

With a 2:1 ratio, the oligomer formed contains terminal diane groups: $HOC_6H_4C(CH_3)_2C_6H_4O[SiR_2O]_nC_6H_4C(CH_3)_2O_6H_4OH$.

Card 2/3

ACCESSION NR: AP4035102

Using the product of the 2:1 reagent ratio there is no viscosity change in going from the dimer to the tetramer, but in the 1:1 product the viscosity increases indicating growth of the polymer chain. When the polymer formed by reaction of polyphenylbutoxysiloxane with diane is completely polymerized (in 8-25 minutes) the product is fusible and soluble; when the polymethylbutoxysiloxane-diane reaction product is polymerized to 60-70% it gels, indicating crosslinkage. Molded fiberglass compositions containing 32% of these polymers were formed at 250-300 kgs/cm^2 at 145-150C, 1.5-2 min/mm and cured at 160C for 6-7 hours. Their physical and mechanical properties are tabulated. Orig. art. has: 4 tables, 4 figures and 3 equations.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00

SUB CODE: OC NO REF SOV: 001 OTHER: 000

Card 3/3

ACCESSION NR: AP4039943 S/0191/64/000/006/0017/0020

AUTHOR: Petrashko, A. I.; Andrianov, K. A.

TITLE: Catalytic polymerization of phenyldimethylsiloxane oligomers in the presence of polymetallophenylsiloxanes.

SOURCE: Plasticheskiye massy*, no. 6, 1964, 17-20

TOPIC TAGS: phenyldimethylsiloxane oligomer, polymerization, synthesis, polymetallophenylsiloxane, polyalumophenylsiloxane, polystannophenylsiloxane, polytitanophenylsiloxane, phenyltrichlorosilane dimethyldichlorosilane cohydrolysis, polyphenylsiloxane dimethyldichlorosilane cohydrolysis, polymerization mechanism, polymer curing, dielectric property, thermomechanical property

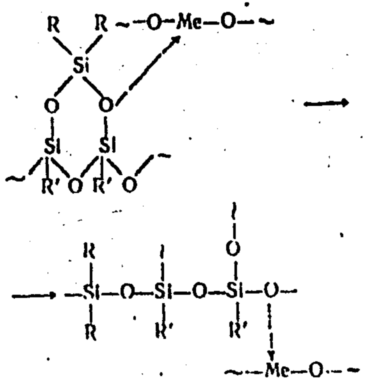
ABSTRACT: The polymerization of phenyldimethylsiloxane oligomers of different compositions, catalyzed by polymetallophenylsiloxanes, was investigated. Phenyldimethylsiloxane oligomers of 5 different structures were formed by the cohydrolysis of phenyltrichlorosilane and dimethyldichlorosilane in molar ratios of 2:1, 3:2, 1:1 and 2:3, and of 1:1 polyphenylsiloxane and dimethyldichlorosilane (sample 5).

Card 1/4

ACCESSION NR: AP4039943

Polymerizations were run in 50% xylene solutions at 120C. Polymerization to gelation was most rapidly effected with 0.5-0.75% catalyst; excess catalyst increased polymerization time. The dielectric (from -50 to 140C) and thermomechanical properties (-50 to 400C) of the polymers were studied. The maximum tangent of the angle of dielectric loss was in the -5 to +20C range, corresponding to the glassing temperature of the polymers. The degree of polymerization has no effect on these properties since curing of the polymers is apparently completed during heat treatment at 150-200C. The catalytic activity of polyalumophenylsiloxane, polystannophenylsiloxane and polytitanophenylsiloxane on the polymerization was found to decrease in that order with the metal with the greatest coordination affinity for oxygen having the greatest catalytic effect. The polymerization mechanism is based on opening of the rings of the polyorganosiloxane molecules with subsequent polymerization:

ACCESSION NR: AP4039943



The method of oligomer preparation has the greatest effect on the polymerization process. It was observed that the viscosity of Sample 5 remained constant even after 15 hours polymerization while viscosities of the other oligomers increased rapidly in less time; Sample 5 gelled after 7 hours 22 minutes in comparison to 58 seconds for the other 1:1 oligomer. "Investigations were conducted by G. Ye.

Card 3/4

ACCESSION NR: AP4043319 S/0191/64/000/008/0013/0016

AUTHOR: Andrianov, K. A.; Khananashvili, L. M.; Kochetkov, A. S.

TITLE: Synthesis and condensation of organo(hydroxyalkoxy)silanes

SOURCE: Plasticheskiye massy*, no. 8, 1964, 13-16

TOPIC TAGS: silane, organotris(hydroxyalkoxy)silane, transesterification

ABSTRACT: A study has been made of the synthesis, properties, and polycondensation of the following organotris(hydroxyalkoxy)silanes: methyl-, ethyl-, or phenyl-tris(2-hydroxyethoxy)silane, or ethyl- or phenyl-tris(4-hydroxybutoxy)silane. These silanes were prepared by transesterification of methyl-, ethyl-, or phenyl- tris(ethoxy)-silane with the appropriate glycol. The organotris(hydroxyalkoxy)-silanes can be polycondensed alone to the polymers or with dimethyl terephthalate or tolylene diisocyanate to the copolymers. The preparative conditions, chemical structure, and some physical, thermomechanical, and electrical properties of the polymers and copolymers are discussed. For example, the polymer produced from

Card 1/2

L 6612-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP4042872 S/0062/64/000/007/1268/1271

AUTHOR: Andrianov, K. A.; Severny*y, V. V. 51 50

TITLE: The telomerization reaction of dimethylcyclosiloxanes. Communication 6. Reaction of hexamethylcyclotrisiloxane with methyldichlorosilane, methylvinyldichlorosilane and methylphenyldichlorosilane

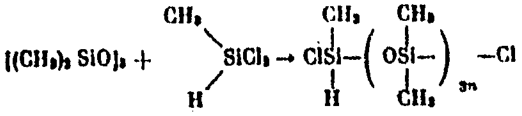
SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 7, 1964, 1268-1271

TOPIC TAGS: dimethylcyclosiloxane, telomerization reaction, hexamethylcyclotrisiloxane methyldichlorosilane, hexamethylcyclotrisiloxane methylvinyldichlorosilane, hexamethylcyclotrisiloxane methylphenyldichlorosilane, reaction product, organodichlorosilane reactivity, hexamethylcyclotrisiloxane oligomer

ABSTRACT: A method was worked out for the synthesis of linear bifunctional oligomers of hexamethylcyclotrisiloxane (HMCT) containing Si-H or vinyl or phenyl radicals based on the reaction of HMCT with methyl-, methylvinyl- or methylphenyldichlorosilanes. The reaction proceeded via a mechanism in which the Si-H bond was not disturbed. Up to 97% conversion of HMCT was obtained upon reaction with methyldichlorosilane (1:1 and 2:1 ratio):

Card 1/3

L 6612-65
ACCESSION NR: AP4042872



The higher HMCT ratio resulted in the formation of a higher yield of the higher telomers (14.3 instead of 3.9% of $n > 4$, 42.8 instead of 7.1% $n = 2$, 31.8 instead of 83.1% $n = 1$) indicating the activity of the methyldichlorosilane was higher than the activity of the telomers formed. Similar reactions were run with methylvinyl- and methylphenyldichlorosilane, (95 and 49% conversion, respectively) forming analgous telomers containing $-\overset{|}{\underset{|}{Si}}-CH=CH_2$ and $-\overset{|}{\underset{|}{Si}}-C_6H_5$ radicals instead of the Si-H. When the vinyl telomer with $n = 1$ (1,7-dichloro-1-vinylheptamethyltetrasiloxane) was reacted with HMCT, a 67% yield of the $n = 2$ telomer was obtained. The reactivity of the organodichlorosilanes in the telomerization reaction with HMCT decreased in the series; $CH_3HSiCl_2 > CH_2{=}CHCH_3SiCl_2 > C_6H_5CH_3SiCl_3$. Orig. art. has: 3 tables and 3 equations.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds Academy of Sciences SSSR)

Card 2/3

L 6612-65
ACCESSION NR: AP4042872

SUBMITTED: 22Nov62 ENCL: 00

SUB CODE: 00, 00 NO REF SOV: 002 OTHER: 000

Card 3/3

L 6611-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP4042873 S/0062/64/000/007/1271/1275

52
51

AUTHOR: Andrianov, K. A.; Severny*y, V. V.

TITLE: The telomerization reaction of dimethylcyclosiloxanes. Communication 7. Preparation of dimethylsiloxane oligomers with functional groups in the organic radical.

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 7, 1964, 1271-1275

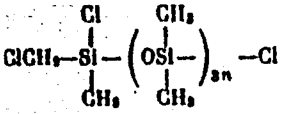
TOPIC TAGS: telomerization, dimethylsiloxane oligomer, synthesis, functional group containing oligomer, hexamethylcyclotrisiloxane, polar group containing organosiloxane, organosiloxane activation

ABSTRACT: Dimethylsiloxane oligomers which contained functional groups in the organic radical in addition to Si-Cl bonds were synthesized, and the effect of the functional group and its polarization in the organic radical on the reactivity of the organochlorosilane in the telomerization reaction of hexamethycyclotrisiloxane (HMCT) was explained. The following (chloroalkyl)alkylchlorosilanes containing functional atoms in the organic radical in the α, β and γ position with respect to the Si atom were reacted with HMCT: (chloromethyl)dimethylchlorosilane (I),

Card 1/3

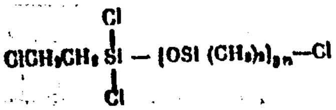
L 6611-65
ACCESSION NR: AP4042873

(chloromethylmethyldichlorosilane (II), β-chloroethyltrichlorosilane (III), γ-chloropropyltrichlorosilane (IV), and β-cyanoethyltrichlorosilane (V). Reaction of HMCT with the alpha-chloro substituted compounds I and II gave a telomer of the formula



$$ClCH_2-\overset{Cl}{\underset{CH_3}{Si}}-\left(O\overset{CH_3}{\underset{CH_3}{Si}}-\right)_{3n}-Cl$$

where n = 1, 2 or 3. When n = 1 there were no breakdown products, but with n was equal to 2 or more, 2, 3 and 4 Si-atom breakdown products were formed, indicating lowered activity of the telomer in comparison with the initial monomer. Reaction with III gave the telomer



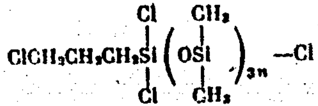
$$ClCH_2CH_2\overset{Cl}{\underset{Cl}{Si}}-[OSi(CH_3)_2]_{3n}-Cl$$

with 39.1% yield of n = 1 and 10.5% of n = 2. Reaction with IV gave the telomer

Cord 2/3

L 6611-65

ACCESSION NR: AP4042873



$$ClCH_2CH_2CH_2\overset{Cl}{\underset{Cl}{Si}}\left(O\overset{CH_3}{\underset{CH_3}{Si}}\right)_{3n}-Cl$$

with n = 1 or 2, and in the reaction with V the Si-O-Si bond rupture was so intense only cleavage products of HMCT were obtained. Introduction of polar groups in the organic radical of the organosiloxanes activated them in the telomerization reaction with HMCT. The activity of the chlorosilanes decreased in the series $\beta > \alpha > \gamma$ and the CN group had a greater effect than the Cl group. Orig. art. has: 4 formulas and 1 equations.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds Academy of Sciences, SSSR)

SUBMITTED: 22Nov62 ENCL: 00

SUB CODE: GC, OC NO REF SOV: 005 OTHER: 000

Card 3/3

L 12979-65 EWT(m)/EPF(c)/T/EWP(j) Pc-4/Pr-4 RM
ACCESSION NR: AP4042874 S/0062/64/000/007/1276/1281

AUTHOR: Petrashko, A. I.; Zhdanov, A. A.; Andrianov, K. A.

B

TITLE: Catalytic polymerization of organosiloxane oligomers in the presence of alkali. Communication 1. Effect of composition and method of oligomer preparation on the polymerization process.

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 7, 1964, 1276-1281

TOPIC TAGS: organosiloxane, organosiloxane oligomer, catalytic polymerization, oligomer synthesis, polymerization rate, hydrolytic polycondensation, double decomposition reaction, spatial hindrance

ABSTRACT: The polymerization in the presence of NaOH of organosiloxane polymers of different chemical composition obtained by different methods was investigated. The polymerization rate of oligomers with $C_6H_5SiO_{1.5}$: $(CH_3)_2SiO$ = 1:1, obtained by hydrolytic polycondensation was higher than of oligomers of analgous composition obtained by double decomposition. This is apparently caused by different stresses of organosiloxane rings in the chain structure. There were also small differences in polymerization rates depending on hydrolytic conditions--water:toluene ratio and

Card 1/2

L 12979-65
ACCESSION NR: AP4042874

2

HCl acceptor. On comparing oligomers with $C_6H_5SiO_{1.5}$: $(CH_3)_2SiO$ = 2:1, 3:2, 1:1 and 2:3, it was found the bulky phenyl radicals bonded to the Si atom spatially obstructed attack of the Si atom by active centers, retarding the polymerization rate. Orig. art. has: 6 figures and 2 tables.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds, Academy of Sciences, SSSR); Vsesoyuzny*y elektrotekhnicheskiy institut im. V. I. Lenina (All Union Electrotechnical Institute)

SUBMITTED: 14Feb64 ENCL: 00

SUB CODE: GC NO REF SOV: 008 OTHER: 000

Card 2/2

ANDRIANOV, K.A.; KHANANASHVILI, L.M.; KOCHETKOV, A.S.

Synthesis of organoglycoxus lanes and their condensation.
Plast. massy no.8:13-16 '64. (MIRA 17:12)

L 24838-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4/Pa-4 RM

ACCESSION NR: AP4047400 S/0062/64/000/010/1877/1879 24 23 B

AUTHOR: Andrianov, K. A.; Yezerets, M. A.; Shul'ga, F. F.; Starodubtsev, E. S.

TITLE: The synthesis of dimethyldichlorosilane

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 10, 1964, 1877-1879

TOPIC TAGS: dimethyldichlorosilane, synthesis, silicon copper alloy, catalyst activation, catalyst alloy structure

ABSTRACT: The reaction of methyl chloride with Si-Cu alloys was investigated to determine optimum conditions for the synthesis of dimethyldichlorosilane (DMDCS). The yield of DMDCS dropped sharply after about 5 hours reaction time; increasing reaction temperature and changing feed rate have no effect on the yield. Addition of group II metal halide promoters extended the time during which a high yield (80%) of DMDCS was obtained to about 15 hours. After 20 hours the yield dropped 20% from the maximum. Treatment of the alloy prior to activation with the metal halide however did not increase the yield of DMDCS but did increase

Card 1/2

L 24838-65

ACCESSION NR: AP4047400

methyltrichlorsilane and carbon yields. The use of a fine grain structured alloy increased DMDCS yield 10-12%. Copper in the alloy was found to cause side reactions, decomposition of the methyl chloride, formation of methyltrichlorosilane, methyldichlorosilane and carbon. On reducing the copper content in the alloy (Abstractor's note: composition was not indicated), 83-84% DMDCS was obtained for 10 hours and 80% yield was obtained even after 30-40 hours. Orig. art. has: 2 tables, 3 figures, and 3 equations.

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Institute of Fine Chemical Technology)

SUBMITTED: 13Feb64 ENCL: 00

SUB CODE: GC, OC NO REF SOV: 002 OTHER: 004

Cord 2/2

L 12462-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM
ACCESSION NR: AP4048206
S/0191/64/000/011/0026/0027

AUTHOR: Petrashko, A. I.; Andrianov, K. A.

8

TITLE: Investigation of the catalytic copolymerization 7 of polyorganosiloxanes 7 with epoxy resin in the presence of polyaluminophenylsiloxane 7

15

SOURCE: Plasticheskiye massy*, no. 11, 1964, 26-27

TOPIC TAGS: silicone, polyorganosiloxane, polysiloxane epoxy resin, copolymer, epoxy resin

ABSTRACT: Catalytic copolymerization of a polyorganosiloxane oligomer with an epoxy resin in the presence of polyaluminophenylsiloxane catalyst has been studied. The oligomer was prepared by cohydrolysis of phenyltrichlorosilane and dimethyldichlorosilane in a 1/1 molar ratio. ED-6 epoxy resin in a 10—50% concentration (on the epoxy-polysiloxane mixture) was used. The copolymerization was carried out in xylene at 80C. The epoxy resin did not homopolymerize, while the oligomer polymerized at a higher rate that it does by itself. This

Card 1/2

L 12462-65

ACCESSION NR: AP4048206

higher rate is attributed to a "cross-linking" effect due to the formation of polyorganosiloxane—polyaluminophenylsiloxane—epoxy resin coordination bonds. Grafting of epoxy resin to polyorganosiloxane changed the latter's properties markedly, in particular its compatibility with epoxy resin. Orig. art. has: 1 figure and 1 formula.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MT, GC

NO REF SOV: 008 OTHER: 001 ATD PRESS: 3123

Card 2/2

L 22441-65 EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4 RPL WW/RM
ACCESSION NR: AP5000484 S/0062/64/000/011/2068/2069

31

B

AUTHOR: Belyakova, Z. V.; Pomerantseva, M. G.; Andrianov, K. A.; Golubtsov, S. A.; Popeleva, G. S.

TITLE: Obtaining γ-trifluoropropylalkenylchlorosilanes and their interaction with hydride chlorosilanes

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1964, 2068-2069

TOPIC TAGS: Grignard addition reaction, gamma trifluoropropylalkenylchlorosilane, methyldichlorosilane, dimethylchlorosilane, gamma trifluoropropyldivinyldichlorosilane

ABSTRACT: The vinyl and allyl title compounds were prepared by Grignard addition reaction of methyldichlorosilane or dimethylchlorosilane with γ-trifluoropropyldivinyldichlorosilane in accordance with the following formulas:

Card 1/3

L 22441-65
ACCESSION NR: AP5000484

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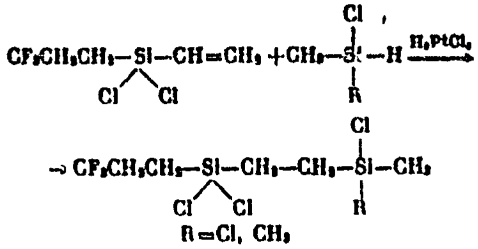
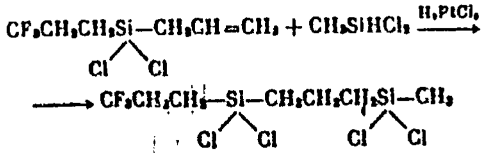


$$CF_3CH_2CH_2-\underset{Cl\ \ Cl}{Si}-CH=CH_2+CH_3-\overset{Cl}{\underset{R}{Si}}-H\xrightarrow{H_2PtCl_6}$$

$$\rightarrow CF_3CH_2CH_2-\underset{Cl\ \ Cl}{Si}-CH_2-CH_2-\overset{Cl}{\underset{R}{Si}}-CH_3$$

$R=Cl,\ CH_3$



$$CF_3CH_2CH_2\underset{Cl\ \ Cl}{Si}-CH_2CH=CH_2+CH_3SiHCl_2\xrightarrow{H_2PtCl_6}$$

$$\longrightarrow CF_3CH_2CH_2-\underset{Cl\ \ Cl}{Si}-CH_2CH_2CH_2\underset{Cl\ \ Cl}{Si}-CH_3$$

The yields are about 30%. The interaction of γ-trifluorochloropropane with magnesium and allyltrichlorosilane gave only γ-trifluoropropylallyldichlorosilane at a 9.2% yield, that of γ-trifluorochloropropane with magnesium and vinyltrichlorosilane gave 32% γ-trifluoropropylvinyldichlorosilane and 25% bis (γ-trifluoro-

Card 2/3

L 22441-65
ACCESSION NR: AP5000484

propyl)vinylchlorosilane. Orig. art. has: 2 formulas

ASSOCIATION: None

SUBMITTED: 26Sep63 ENCL: 00 SUB CODE: OC, OC

NR REF SOV: 000 OTHER: 000

Card 3/3

ANDRIANOV, K.A.; KURAKOV, G.A.; KHANANASHVILI, L.M.

Rea-tion of 1,3-dioxolane with organochlorosilanes. Izv. AN SSSR Ser. khim. no.12:2243-2245 D '64 (MIRA 18:1)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

L 24422-65 EPF(c)/EPR/EPA(s)-2/EWP(j)/EWT(m)/T Pc-4/Pr-4/Ps-4/Pt-10
AFGC/SSD RM/WW/DJ

ACCESSION NR: AP4048957 S/0286/64/000/020/0060/0060

46B

AUTHOR: Andrianov, K. A.; Lavy*gin, I. A.; Kobzova, R. I.; Tubyanskaya, G. S.; Shvetsov, Yu. A.

TITLE: Method for increasing the thermal-oxidative stability 15 of polyorganosiloxane fluids. 15 Class 39, No. 165897

15

SOURCE: Byulleten' izobreteniy i tovarny*kh znakov, no. 20, 1964, 60

TOPIC TAGS: polyorganosiloxane fluid, thermal oxidative stability

ABSTRACT: An Author Certificate has been issued for a method of improving the thermal-oxidative stability 11 of polyorganosiloxane fluids 11 by the addition of [(8-hydroxquinolinyl)titano]-polydimethylsiloxane 11 oligomers.

ASSOCIATION: none

SUBMITTED: 18Apr63 ENCL: 00 SUB CODE: GC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3132

Card 1/1

ACCESSION NR: AP4011267 S/0286/64/000/002/0055/0055

AUTHOR: Andrianov, K. A.; Kurasheva, N. A.; Delazari, N. V.

TITLE: A method for producing organoelemental liquids with a branched, cruciform molecular structure. Class 39, No. 159989

SOURCE: Byul. izobret. i tovarn. znakov, no. 2, 1964, 55

TOPIC TAGS: organoelemental compound, organoelemental liquid, organic liquid, branched molecular structure, pyridine

TRANSLATION: A method for producing organoelemental liquids with a branched, crosslike molecular structure is reported whose characteristic feature is that mono- or difunctional hydroxyl derivate diorgano siloxanes are condensed with (1) halogen derivatives of titanium or silicon in the presence of an acceptor or (2) tetra-alkoxy derivatives of silicon or titanium. Heating to 80°C, for example, can also be employed, and pyridine can be used as an acceptor.

Card 1/2

L 18254-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 ASD(m)-3 RM

ACCESSION NR: AP5000007 S/0286/64/000/021/0014/0014

AUTHOR: Andianov, K. A.; Golubtsov, S. A.; Trofimova, I. V.; Trofimov, V. I.; Denisova, A. S. B

TITLE: Preparative method for alkyl- or aryl-chlorosilanes. Class 12, No. 166025

SOURCE: Byul. izobr. i tovar. znakov, no. 21, 1964, 14

TOPIC TAGS: silane, chlorosilane, alkylchlorosilane, arylchlorosilane, fluidized bed, copper-silicon alloy

ABSTRACT: An Author Certificate has been issued for a preparative method for alkyl- and aryl-chlorosilanes involving stirring during the reaction of a copper-silicon alloy with alkyl or aryl chlorides. In order to raise productivity and yield, the stirring is effected by a jet of the alkyl or aryl chloride at a velocity of 1—20 cm/sec, so that the process is carried out in a fluidized bed; the alloy particle size is 0.02—0.25 mm.

ASSOCIATION: none

Card 1/2

L 18254-65

ACCESSION NR: AP5000007

SUBMITTED: 19May63	ENCL: 00	SUB CODE: OC, GC
NO REF SOV: 000	OTHER: 000	ATD PRESS: 3156

Card 2/2

ACCESSION NR: AP4032569 S/0190/64/006/004/0691/0694

AUTHORS: Andrianov, K. A.; Kotrelev, G. V.

TITLE: Catalytic polymerization of trimethyltriphenylcyclotrisilazane

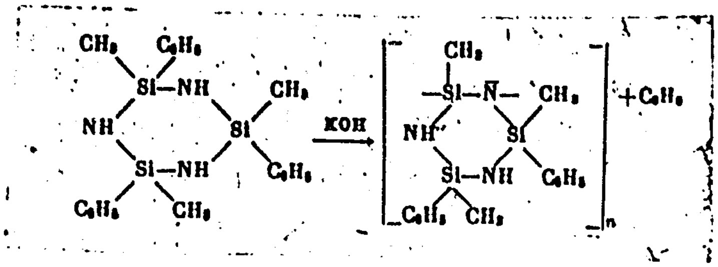
SOURCE: Vy#sokomolek. soyedin., v. 6, no. 4, 1964, 691-694

TOPIC TAGS: organosilicon compound, silizane, alkylarylsilazane, cyclosilazane polymerization, chain polymer, chain block cyclic structure, potassium hydroxide catalysis, benzene liberation

ABSTRACT: In an earlier publication by K. A. Andrianov and G. Ya. Rumba (Vy#sokomolek. soyed., 4, 1060, 1962) it was shown that (in the presence of alkaline catalysts) dimethylcyclosilazanes, unlike dimethylcyclosiloxanes, undergo polymerization with the formation of polymers having a cyclic structure of the chain block molecule. In the present investigation 10 g of trimethyltriphenylcyclotrisilazane (TTCTSA) were heated at 180-400C in the presence of 1% KOH. This resulted in the liberation of benzene starting at 180C and increasing with time, according to a polymerization reaction of the type:

Card1/3

ACCESSION NR: AP4032569



In this way 1.95 g of benzene were obtained from 10 g of TICTSA within a 5-hour polymerization period at 200C. Analysis of the obtained polymers revealed an increased silicon content and a lowered amount of carbon at higher temperatures and extended reaction time. The structure of the polymers at the earlier stages of the reaction was found to be linear and to consist of cyclic units presented in the formula, whereas in an advanced stage of polymerization there seemed to have occurred a branching of the molecules. An investigation of the thermomechan-

ACCESSION NR: AP4032569

ical properties of the polymers revealed a behavior typical of a nonstructurated polymer (without a region of high elastic state). Orig. art. has: 3 tables and 2 charts.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organoelemental Compounds AN SSSR)

SUBMITTED: 28Apr63 DATE ACQ: 11May64 ENCL: 00

SUB CODE: GC, MM NO REF SOV: 001 OTHER: 000

Card 3/3

ACCESSION NR: AP4037291 S/0190/64/006/005/0940/0944

AUTHOR: Zhdanov, A. A.; Andrianov, K. A.; Kazakova, A. A.; Baksheyeva, T. S.

TITLE: Polymers with inorganic backbone. Synthesis of polyorganophosphoroaluminoxanes

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 5, 1964, 940-944

TOPIC TAGS: polymers, inorganic backbone containing polymer, phosphorus containing polymer, aluminum containing polymer, aluminoxane, polyorganophosphoroaluminoxane, aluminum containing polymethylphosphonate, aluminum ethylate, aluminum butylate, diethyl methylphosphonate, dibutyl methylphosphonate, diphenyl methylphosphonate, polycondensation, methylphosphonyl chloride

ABSTRACT: The reaction of aluminum alcoholates with some derivatives of methylphosphonic acid, and the properties of the condensation products obtained have been studied. Aluminum ethylate or

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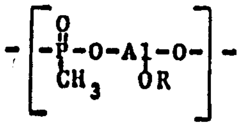
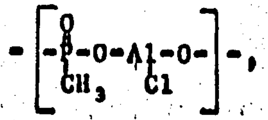
ACCESSION NR: AP4037291

aluminum butylate was condensed with either methylphosphonyl chloride or diethyl, dibutyl, or diphenyl methylphosphonate. Solid polymers obtained in the process of the progressing condensation contained the group



$$-\left[-\overset{O}{\underset{CH_3}{P}}-O-\underset{OR}{Al}-O-\right]-$$

and, if methylphosphonate chloride was used, the group



$$-\left[-\overset{O}{\underset{CH_3}{P}}-O-\underset{Cl}{Al}-O-\right]-,$$

L 8647-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10
WW/RM

ACCESSION NR: AP4043791 S/0190/64/006/008/1505/1514

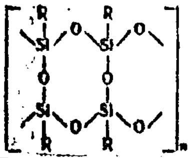
AUTHOR: Petrashko, A. I.; Andrianov, K. A.

TITLE: Thermal-oxidative degradation of polymers with inorganic backbone

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 8, 1964, 1505-1514

TOPIC TAGS: polyorganosiloxane, polyorganometallosiloxane, thermal oxidative degradation, Al, Sn, Ti, organic substituent, organic substituent oxidation, silicone

ABSTRACT: The effect of the incorporation of metals (Ti, Sn, or Al) in polyorganosilaxanes on the stability of organosilicon polymers to thermal-oxidative degradation has been studied. Experiments were conducted with polymers with the composition

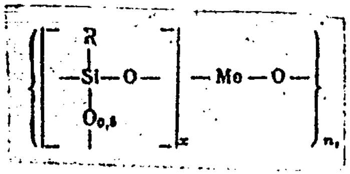


Card 1/4

L 8647-65

ACCESSION NR: AP4043791

(when R is methyl, ethyl, phenyl, or vinyl) and with their block copolymers with polyorganometallosiloxanes of the type



$$\left\{\left[\begin{array}{c} R \\ | \\ -Si-O- \\ | \\ O_{0,5} \\ | \end{array}\right]_x -Me-O-\right\}_{n},$$

(where Me is Al, Sn, or Ti; R is C_2M_5 or C_6M_5; and x = 3 to 5). Because thermal-oxidative degradation of these polymers proceeds by the splitting off of organic substituents without degradation of the molecules at the siloxane links, the thermal-oxidative stability of the polymers can be evaluated from the weight loss. The Me/Si ratio in the block copolymers was either 1.0/100 or 1.5/100. The thermomechanical properties of the copolymers differed sharply from those of the initial polymers as shown in Fig. 1 of the Enclosure. Thermal-oxidative degradation was conducted at 400C in air. It was shown that the effect of metals on the stability of organic radicals in organosilicon polymers subjected to thermal-oxidative degradation depends on the nature of the organic substituents on Si: metals decrease the stability of phenyl and vinyl

Card 2/4

L 8647-65

ACCESSION NR: AP4043791 2

radicals, but increase that of methyl and ethyl radicals. The effect of the metal on the stability of phenyl and vinyl substituents increases in the order, Ti<Sn<Al, and their effect on the stability of alkyl radicals, in the order Ti<Al<Sn. The methyl radical is more stable than the ethyl radical. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut im. V. I. Lenina (All-Union Electrotechnical Institute); Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organo-Elemental Compounds, AN SSSR)

SUBMITTED: 09Oct63 ATD PRESS: 3111 ENCL: 01

SUB CODE: GC, OC NO REF SOV: 003 OTHER: 000

Card 3/4

L 8647-65
ACCESSION NR: AP4043791

ENCLOSURE: 01

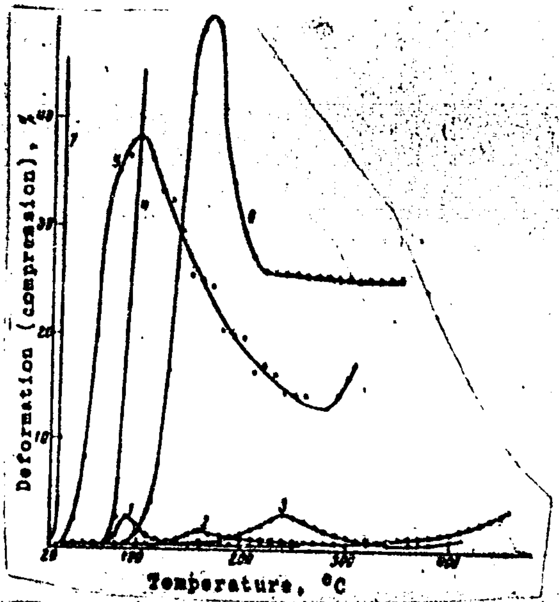


Fig. 1. Thermomechanical properties of polymers based on polyphenylsiloxane and polymethylsiloxane

1 - M-Ti-1.0; 2 - ϕ-Al-1.0; 3 - ϕ-Ti-1.0; 4 - ϕ; 5 - Mn-Sn-1.0; 6 - ϕ-Sn-1.0; 7 - M. (M - methyl; ϕ - phenyl)

4/4

Card

L 14461-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 ASD(m)-3/AFETR RM

ACCESSION NR: AP4045433 S/0190/64/006/009/1662/1667

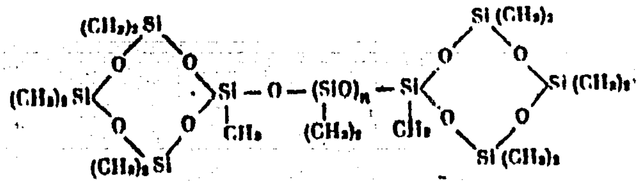
AUTHOR: Andrianov, K. A.; Volkova, Lora M. 9 B

TITLE: Catalytic polymerization of dicyclic dimethylsiloxanes

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 9, 1964, 1662-1667

TOPIC TAGS: silicone, siloxane, dimethylsiloxane, polysiloxane, dicyclic polysiloxane

ABSTRACT: A study has been conducted of the synthesis of branched polyorganodimethylsiloxanes containing silsesquioxane groups at regular intervals in the backbone by catalytic polymerization of dicyclic dimethylsiloxane oligomers. Oligomers of the formula



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ACCESSION NR: AP4045433

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containing a large number (n) of dimethylsiloxane units between the rings (n = 13, 32, 66, 145, 170, 198, 224, or 270) were prepared by condensation of α,ω-dihydroxypolydimethylsiloxanes with heptamethylchlorocyclotetrasiloxane. Study of the polymerization of these oligomers revealed that in the presence of KOH they polymerize much more readily than octamethylcyclotetrasiloxane. A kinetic study of the polymerization at 70C in the presence of 0.5% KOH catalyst showed that with increasing n, the reaction rate and degree of cross linking decrease. All the polymers were transparent products which swelled readily in benzene and toluene. Polymers with n = 12 or 66 were brittle gels; those with n = 170 or over were very elastic materials. A thermomechanical study showed that the polymers differ considerably from linear polydimethylsiloxanes — their glass-transition temperature, is -90C, as compared to -58C for the polydimethylsiloxanes. Studies are being conducted to explain this sharp difference. Orig. art. has: 4 formulas and 5 figures.

Card 2/3

L 14461-65
ACCESSION NR: AP4045433

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

SUBMITTED: 12Nov63 ENCL: 00

SUB CODE: OC, IC NO REF SOV: 008 OTHER: 002

Card 3/3

ANDRIANOV, K.A.; MANEVICH, I.Ya.

Synthesis and properties of acid salts of methylphosphinic acid.
Zhur.neorg.khim. 9 no.1:210-212 Ja '64. (MIRA 17:2)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

ANDRIANOV, K.A.; PICHKHADZE, Sh.V.; NOGAYDELI, A.I.; VARDOSANIDZE, TS.N.

Poly-bis-(8-hydroxyquinoline)-titanomethylphenylsiloxanes. Soob. AN Gruz. SSR 33 no.3:557-564 Mr '64 (MIRA 17:8)

1. Institut khimii imeni P.G. Melikishvili AN GruzSSR i Institut elementoorganicheskikh soyedineniy AN SSSR. Predstavleno akademikom G.V. TSitsishvili. 2. Chlen-korrespondent AN SSSR (for Andrianov).

ACCESSION NR: AP4022962 S/0079/64/034/003/0912/0914

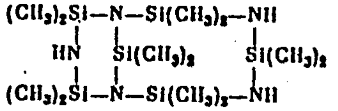
AUTHOR: Andrianov, K. A.; Khayduk, Ionel; Khananashvili, L. M.

TITLE: The formation of polycyclosilasanes during ammonolysis of dimethyldichlorosilane

SOURCE: Zhurnal obshchey khimii, v. 34, no. 3, 1964, 912-914

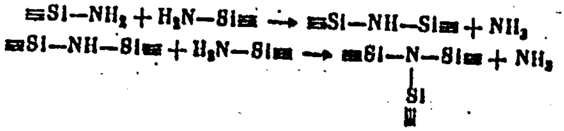
TOPIC TAGS: polycyclosilazane, ammonolysis, dimethyldichlorosilane, dodecane methylbicyclo 3comma4 hexacyclpentazane, diaminosilazane

ABSTRACT: Dodecane methylbicyclo (3,4) hexacylpentazane and the polymer



together with hexamethylcyclotrisilazane and octamethylcyclotetrasilazane were obtained while carrying out the reaction of dimethyldichlorosilane with ammonia in benzene solution at a temperature not exceeding 30 C. A study of this reaction indicated that the composition of ammonolysis products depends on the operating

conditions of the synthesis. If the reaction is carried out with subsequent heating of products and no separation of ammonium chloride, a bicyclic compound with low yield forms. If the product of ammonolysis is heated after separation of ammonium chloride, the yield of the bicyclic compound and the polymer increases significantly. It is interesting to note that ammonia separation is observed in the process of heating the product of the dimethyldichlorosilane ammonolysis reaction. While the gaseous ammonia takes effect on the dimethyldichlorosilane, the reaction occurs not only with monocycliccompounds forming, but also with linear diaminosilazanes $H_2N-(R_2SiNH)_n-R_2Si-NH_2$. The latter are much more likely to form in conditions of low temperature ammonolysis. This confirms the fact that during heating of products of ammonolysis, ammonia is always separated. This can develop only as a result of condensation of the amino groups in the silicon atoms or as a result of transamination:

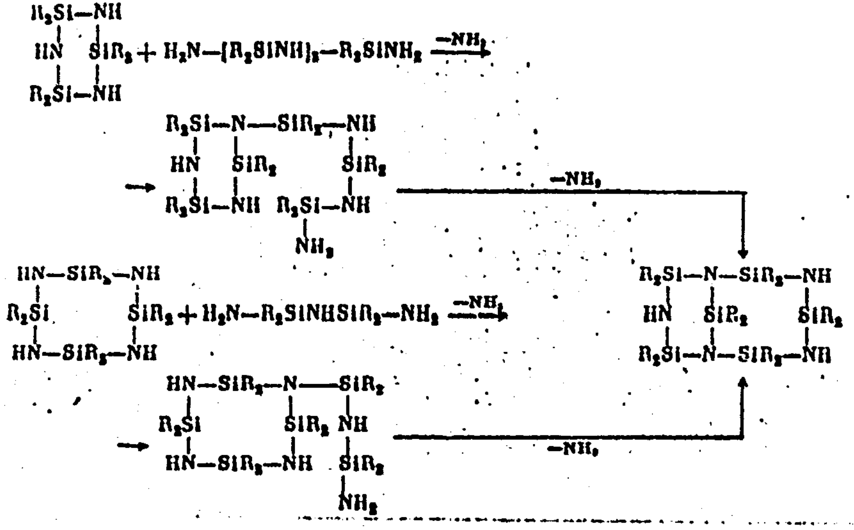


$$\equiv Si-NH_2 + H_2N-Si\equiv \rightarrow \equiv Si-NH-Si\equiv + NH_3$$

$$\equiv Si-NH-Si\equiv + H_2N-Si\equiv \rightarrow \equiv Si-\underset{\underset{\equiv}{Si}}{\underset{|}{N}}-Si\equiv + NH_3$$

ACCESSION NR: AP4022962

Consequently, the formation of a bicyclic compound and of polymers obtained during the reaction of dimethyldichlorosilane with ammonia may be explained by the following reactions:



Card 3/4

ACCESSION NR: AP4034567 S/0079/64/034/004/1111/1113

AUTHOR: Popeleva, G. S.; Andrianov, K. A.; Larionova, A. A.; Golubtsov, S. A.

TITLE: Thermal condensation of dimethylchlorosilane with certain organic chloro-derivatives.

SOURCE: Zhurnal obshchey khimii, v. 34, no. 4, 1964, 1111-1113

TOPIC TAGS: dimethylchlorosilane, thermal condensation, dimethylvinylchlorosilane, dimethylallylchlorosilane, β chlorovinyldimethylchlorosilane, bis dimethylchlorosilyl ethylene, p chlorophenyldimethylchlorosilane, disproportionation, monofunctional derivative, polyfunctional derivative, distillation, purification, etherification

ABSTRACT: This is a continuation of earlier investigations of the thermal condensation of chlorosilanes with different chloro-organic compounds. In this investigation the thermal condensation (at 500-550 C) of chloroorganics with dimethylchlorosilane were studied:

$$(CH_3)_2SiHCl + RCl \rightarrow (CH_3)_2RSiCl + HCl,$$
$$R = CH_2{=}CH,\ CH_2{=}CHCH_2,\ ClCH{=}CH,\ ClC_6H_4$$

Card 1/2

ANDRIANOV, K.A.

Studies on polymers with inorganic main molecular chains.
Vest. AN SSSR 34 no.5:38-46 My '64. (MIRA 17:6)

1. Chlen-korrespondent AN SSSR.

ACCESSION NR: AP4037060 S/0079/64/034/005/1684/1685

AUTHOR: Andrianov, K. A.; Kurakov, G. A.; Kopy*lov, V. M.; Khananashvili, L. M.

TITLE: New synthesis method for methylbromosilanes and methylbromochlorosilanes

SOURCE: Zhurnal obshchey khimii, v. 34, no. 5, 1964, 1684-1685

TOPIC TAGS: methylbromosilane, methylbromochlorosilane, trimethylbromosilane, dimethylchlorobromosilane

ABSTRACT: Trimethylbromosilane and dimethylchlorobromosilane have been prepared by treatment of trimethylchlorosilane or dimethyldichlorosilane with hydrogen bromide in the presence of anhydrous $FeCl_3$ or iron filings. Either HBr gas or HBr generated by the reaction of bromine with naphthalene or tetralene can be used. Boiling points of the products are 79-80C and 93-94C, respectively. This work was done at the Moscow Institute of Fine Chemical Technology.

Card 1/2

L 17534-65 EWT(m)/EPF(c)/EWP(j)/T/EWP(t)/EWP(b) Pc-4/Pr-4 IJP(c)/ASD(f)-2/
Pa-4 JD/RM
ACCESSION NR: AP4044197 S/0079/64/034/008/2706/2708

AUTHORS: Lobusevich, N.P.; Trofimova, I.V.; Golubtsov, S.A.; Andrianov, K.A.; Layner, D.I.; Maly*sheva, L.A.

TITLE: The effect of additions of certain elements to silicon copper alloys on their activity in the reaction with methyl chloride 27 27

SOURCE: Zhurnal obshchey khimii, v. 34, no. 8, 1964, 2706-2708

TOPIC TAGS: silicon copper alloy, methyl chloride reaction, methylchlorosilane, synthesis, dimethyldichlorosilane, reaction promoter, reaction inhibitor, phosphorus, sulfur, beryllium, zinc, arsenic

ABSTRACT: The effect of phosphorus, sulfur, beryllium, zinc and arsenic on the overall and the selective activity of Si-Cu alloys in the direct synthesis of methylchlorosilanes was investigated. 0.005-0.008% of P or S and <0.1% of Be lowered the activity of the Si-Cu alloys as determined by the dimethyldichlorosilane yield. 0.05-0.1% As and 0.5-1.5% Zn acted as promoters, increasing the overall and the selective activity of the alloy and lowering the synthesis temperature from 360 to 320C. The nature of the effect of each additive changed depending on the presence of other impurities.

Card 1/2

ANDRIANOV, K.A.; YEZERETS, M.A.; SHUL'GA, F.F.; STARODUBTSEV, E.S.

Synthesis of dimethyldichlorosilane. Izv. AN SSSR. Ser. khim. no.10:1877-1879 O '64. (MIRA 17:12)

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

ANDRIANOV, K.A.; YEMEL'YANOV, V.N.

Reaction of chloroalkanoic acids with pentaerythritol. Zhur. ob. khim. 34 no.11:3817-3818 N '64 (MIRA 18:1)

LOBUSEVICH, N.P.; TROFIMOVA, I.V.; ANDRIANOV, K.A.; GOLUBTSOV, S.A.

Effect of mositure, methanol, and oxygen in methyl chloride on the synthesis of methylchlorosilanes. Zhur.prikl. khim. 37 no. 5:1148-1152 My '64. (MIRA 17:7)

L 16656-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP4041804 S/0080/64/037/007/1634/1636

AUTHOR: Golubtsov, S. A.; Tsvanger, T. A.; Andrianov, K. A.; Tishina, N. N. Vasil'chikov, N. V.

TITLE: Effect of conditions on the synthesis of phenyltrichlorosilane from silicon, chlorobenzene and hydrogen chloride in a fluidized bed

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 7, 1964, 1634-1636

TOPIC TAGS: phenyltrichlorosilane, synthesis, fluidized bed reaction, reaction condition, reactant ratio, reaction temperature, reaction pressure, reactant feed rate

ABSTRACT: This is a continuation of work reported by K. A. Andrianov, S. A. Golubtsov, N. N. Tishina and I. V. Trofimaova (ZhPKh, XXXII, 201 (1959)) to determine optimum conditions for the fluidized bed synthesis of phenyltrichlorosilane by reaction of silicon (as a 20% Si-Cu alloy), chlorobenzene and hydrogen chloride. Results are summarized. It was found that optimum conditions include: (a) reactant ratio of HCl: C_6H_5Cl = 1.5; (b) gas flow rate = 2.5 cm/sec; (c) con-

Card 1/2

L 16654-65

ACCESSION NR: AP4048460

4

chemical properties are studied for the first time. These studies showed that some of these esters have good properties as plasticizers and can be used with polyvinyl chloride, polyamide and nitrocellulose resins. Research is being continued with reference to improving the ester yield, testing them as plasticizers and synthesizing esters based on cyclohexylcarbinol. Orig. art. has: 1 structural formula and 2 tables.

ASSOCIATION: Institut neftekhimicheskikh protsessov (Institute of Petrochemical Processes)

SUBMITTED: 19Feb.64

ENCL: 00

SUB CODE: OC

NO REF SOV: 009

OTHER: 000

Card 2/2

ACCESSION NR: AP4041153 S/0020/64/156/004/0858/0860

AUTHOR: Andrianov, K. A.; Kononov, A. M.

TITLE: The mechanism of the rearrangement of dimethylcyclosilazanes

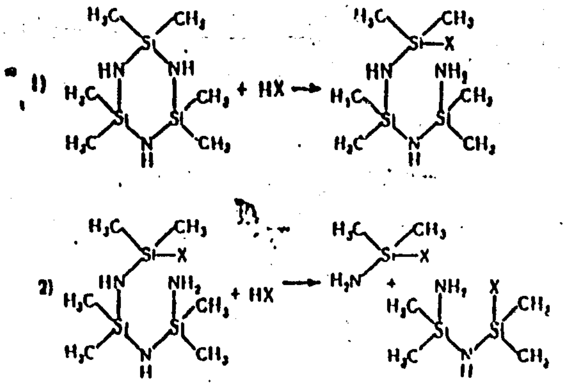
SOURCE: AN SSSR. Doklady*, v. 156, no. 4, 1964, 858-860

TOPIC TAGS: dimethylcyclosilazane, rearrangement, mechanism, ring expansion, ring contraction, ring cleavage, Si X reactivity, Si NH sub 2 reactivity, trimethyltriethyldisilazane

ABSTRACT: The following mechanism is proposed for the rearrangement of dimethylcyclosilazanes leading to expansion or contraction of the ring after its cleavage by the action of HX (HCl or H_2SO_4):

Card 1/3

ACCESSION NR: AP4041153



Since no intermediate products could be isolated, reactions were run to confirm the reaction between the compounds possibly formed containing Si-X and Si-NH_2 groups. Reaction of triethylaminosilane with trimethylsilane or with bis-(trimethylsilyl)-sulfate resulted in the formation of 1-trimethyl-3-triethyldisilazane, confirming the possible recombination of the intermediate compounds shown above.

Card 2/3

ACCESSION NR: AP4041153

Orig. art. has: 4 equations.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic Compounds Academy of Sciences SSSR)

SUBMITTED: 18Feb64 DATE ACQ: 00 ENCL: 00

SUB CODE: GC NO REF SOV: 002 OTHER: 000

Card 3/3

L 10802-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP4045097 S/0020/64/158/001/0133/0136

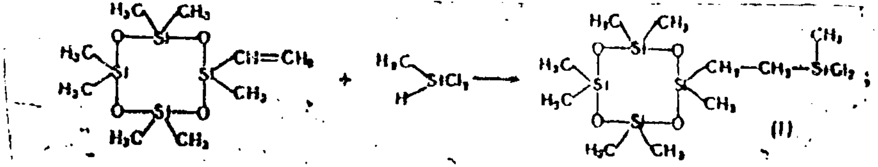
AUTHOR: Andrianov, K. A. (Corresponding member AN SSSR); Sidorov, V. I.; Khananashvili, L. M.; Bagratishvili, G. D.; Kantariya, M. L.; Tsitsishvili, G. V. (Academician AN GruzSSR)

TITLE: Addition of certain hydrogen-containing organosilicon compounds to vinyl derivatives of organocyclosiloxanes and to isoprene

SOURCE: AN SSSR. Doklady, v. 158, no. 1, 1964, 133-136

TOPIC TAGS: addition reaction, chlorosilane, isoprene, organocyclosiloxane, chloroplatinic acid

ABSTRACT: The following reactions have been conducted in the presence of chloroplatinic acid: 1) Addition of methyldichlorosilane to heptamethylvinylcyclotetrasiloxane yielded the compound

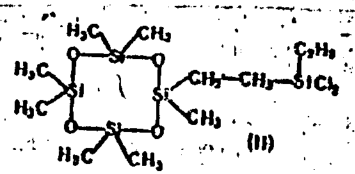


Card 1/4

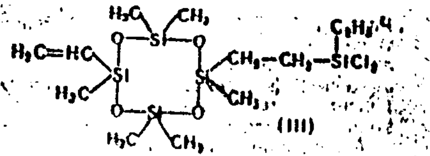
L 10802-65

ACCESSION NR: AP4045097

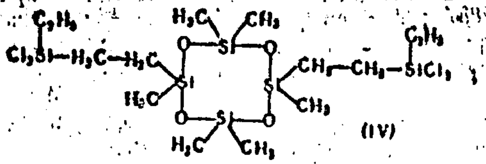
2) addition of ethyldichlorosilane to heptamethylvinylcyclotetrasiloxane or hexamethyldivinylcyclotetrasiloxane yielded the compounds (II,



(II)



(III)

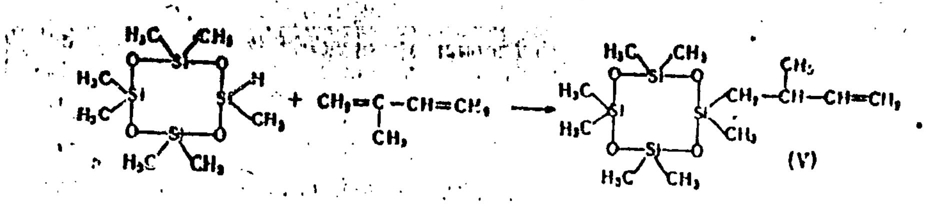


(IV)

Card 2/4

L 10802-65
ACCESSION NR: AP4045097

3) addition of isoprene to heptamethylcyclotetrasiloxane yielded the compound



(V)

The synthesized compounds were identified by chemical analysis, molecular weight determination, molar refraction, and IR spectroscopy; the NPR spectrum was recorded for compound II. Compounds I, II, III, IV, and V were obtained in yields of 65.5, 67.7, 63.2, 39.6, and 51.9%, respectively. They are liquids with molecular weights varying from 365 to 543 and with boiling points varying from 86 to 186C per 5 mm Hg. Orig. art. has: 1 table, 1 figure, and 5 formulas.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im.

L 10802-65
ACCESSION NR: AP4045097

M. V. Lomonosova (Moscow Institute of Fine Chemical Technology)

SUBMITTED: 08Apr64 ATD PRESS: 3117 ENCL: 00

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

Card 4/4

L 16398-65 EWT(m)/EPF(c)/EPR/EWP(j) Pc-4/Pr-4/Ps-4 RPL WW/RM
ACCESSION NR: AP4046376 S/0020/64/158/003/0641/0644

AUTHOR: Zhinkin, D. Ya.; Morgunova, M. M.; Popkov, K. K.
Andrianov, K. A. (Corresponding member AN SSSR)

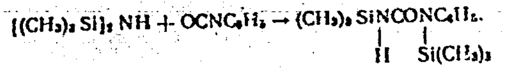
B

TITLE: Reaction of silazanes with organic isocyanates

SOURCE: AN SSSR. Doklady*, v. 158, no. 3, 1964, 641-644

TOPIC TAGS: silazane, isocyanate, urea derivative

ABSTRACT: A study has shown that in the reaction of phenyl isocyanate with an alkylsilazane, the $\geq$Si-N$<$ bond breaks and the trialkylsilyl group migrates to the isocyanate nitrogen to form the urea derivative. For example, the reaction of phenyl isocyanate with hexamethyldisilazane proceeded as follows:



$$[(CH_3)_3Si]_2NH + OCNC_6H_5 \rightarrow (CH_3)_3Si\underset{H}{\underset{|}{N}}CO\underset{Si(CH_3)_3}{\underset{|}{N}}C_6H_5.$$

N-methyl(hexamethyldisilazane), diethyl(trimethylsilyl)amine, or

L 16398-65

ACCESSION NR: AP4046376

0

N,N'-bis(trimethylsilyl)-N-methyl-N'-phenylurea behave similarly. It was also shown that phenyl isocyanate reacts with a trialkylsilyl-substituted urea which also contains a hydrogen substituent at one nitrogen atom, to form the trialkylsilyl isocyanate and silyl-substituted urea. This was exemplified by the reaction of 1 mol N, N' - bis(trimethylsilyl)-N-phenylurea with 2 mols phenyl isocyanate to form trimethylsilyl isocyanate and N, N'-diphenyl-N-(trimethylsilyl)urea. Trimethylsilyl isocyanate does not react with an alkylsilazane or a trimethylsilyl-substituted urea. The reaction products were identified by IR spectroscopy and hydrolysis. Orig. art. has: 3 figures and 5 formulas.

ASSOCIATION: none

SUBMITTED: 17Apr64

ENCL: 00

SUB CODE: GC, OC

NO REF SOV: 000

OTHER: 002

Card 2/2

L 24827-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RPL/SSD(c)/AFMD(t) RM

ACCESSION NR: AP4047325 S/0020/64/158/004/0868/0871 23 21 B

AUTHOR: Andrianov, K. A.; Sidorov, V. I.; Khananashvili, L. M.

TITLE: The reactivity of alkenylmethylsiloxanes in reactions with diazomethane and phenylazide

SOURCE: AN SSSR. Doklady*, v. 158, no. 4, 1964, 868-871

TOPIC TAGS: alkenylmethylsiloxane, reactivity, nucleophilic addition reaction, diazomethane, phenylazide, Diels Alder condensation. vinyl cyclic organosiloxane, allyl cyclicsiloxane, IR spectrum, NMR spectrum

ABSTRACT: The addition reactions of diazomethane or phenylazide to vinyl- and allyl derivatives of linear and cyclic organosiloxanes and the Diels-Alder diene condensation were investigated. Vinylheptamethylcyclotetrasiloxane (I) and 3-vinylheptamethyltrisiloxane (II) reacted readily with diazomethane at -15 to +20C with or without ultraviolet irradiation, to form Δ'-pyrazolinyl derivatives which lost nitrogen on heating to 180-200C to form the corresponding allyl derivatives of the organosiloxanes. I and II likewise readily added phenylazide to form the

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L 24827-65
ACCESSION NR: AP4047325

2

N-phenylaziridinyl derivatives, probably via the triazoline intermediate. Compounds with the alkenyl group in the beta-position with respect to the silicon atom, e. g., allylheptamethylcyclotetrasiloxane did not react with diazomethane or phenylazide, further confirming that in nucleophilic addition reactions the vinyl group alpha to the Si atom is more reactive than in the beta position. II reacted with butadiene-1, 3 to form 3-(cyclohexenyl-3-) heptamethyltrisoloxane. Molecular weights and molar refractions were determined and IR spectra were obtained for all the compounds; the NMR spectrum of 3-(Δ'-pyrazolinyl)-heptamethyltrisoloxane was obtained. "The authors sincerely thank M. T. Zaytsev for obtaining the IR absorption spectra." Orig. art. has: 4 equations and 9 formulae.

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

SUBMITTED: 19May64 ENCL: 00

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

Card 2/2

L 23288-65
ACCESSION NR: AP4049922 S/0020/64/159/003/0599/0601

AUTHOR: Zubkov, V.I.; Tikhomiarov, M. V.; Golubtsov, S. A.; Andrianov, K. A. B (Academician)

TITLE: Mass-spectrometric study of intermediate products of the reaction between silicon and cuprous chloride

SOURCE: AN SSSR. Doklady*, v. 159, no. 3, 1964, 599-601

TOPIC TAGS: mass spectrometer, silicon oxidation, cuprous chloride, silicon dichloride

ABSTRACT: The work was carried out by means of an MI-1305 mass spectrometer with an ion source. The mixture of cuprous chloride and silicon (particles 75-250m) was placed in an ampoule (see Fig. 1 of the Enclosure), which was surrounded by a tungsten heater. The temperature of the ampoule was measured with a thermocouple attached to its outer surface. The gaseous products of the reaction entered the ionization chamber of the source through an aperture in a platinum diaphragm. Silicon tetrachloride could also be introduced into the ion source throught this ampoule. The ion currents were measured with an SI_01 ion counter. The mass-spectrometric study of the reaction mixture CuCl = Si showed that even at low temperatures (180C), the ratios of peak intensities in the mass spectrum correspond to the presence of the compound

Card 1/3

L 23288-65
ACCESSION NR: AP4049922

O

$SiCl_2$. This also confirms the following equations:

$$Si + 2CuCl \rightarrow 2Cu + SiCl_2. \qquad (1). \qquad (1)$$

$$SiCl_2 + 2CH_3Cl \cdot Cu \rightarrow (CH_3)_2SiCl_2 + 2CuCl \qquad (2) \qquad (2)$$

$$SiCl_2 + 2CuCl \rightarrow SiCl_4 + 2Cu. \qquad (3) \qquad (3)$$

The authors also studied the mass spectra of the end product of the reaction, silicon tetrachloride, and of the gaseous products evolved. Orig. art. has: 1 figure, 1 table, and 3 chemical equations.

ASSOCIATION: None

SUBMITTED: 10Jul64

ENCL: 01

SUB CODE: IC, GP

NO REF SOV: 004

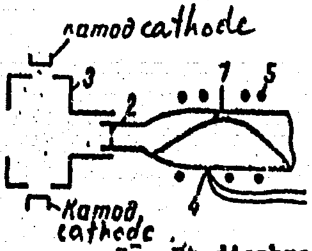
OTHER: 001

Card 2/3

L 23288-65
ACCESSION NR: AP4049922

ENCLOSURE: 01 0

Fig. 1. Schematic illustration of the mass spectrometer.



1 - ampoule, 2 - source, 3 - Pt diaphragm, 4 - thermocouple, 5 - tungsten heater.

Card 3/3

L 27789-65 EWT(m)/EPF(c)/T/EWP(j) Pc-4/Pr-4 RM
ACCESSION NR: AP5004311 S/0191/65/000/002/0022/0026

AUTHOR: Andrianov, K. A.; Yemel'yanov, V. N.

21
B

TITLE: Three-dimensional polycondensation

SOURCE: Plasticheskiye massy, no. 2, 1965, 22-26

TOPIC TAGS: polycondensation, three dimensional polycondensation, cross linked polymer, pentaerythritol polyester, adipic acid polyester, glycol polyester

ABSTRACT: A method for preparing three-dimensionally crosslinked polymers (Iv. AN SSSR, Otd. Khim. Nauk #7, 1267, 1963) was used in the esterification of pentaerythritol tetraadipate with various glycols to define the reaction kinetics and their dependence on the glycol structure. Pentaerythritol tetraadipate and heptaisopropyleneglycol, triethyleneglycol, diethyleneglycol, butyleneglycol or ethyleneglycol were polymerized at a 1:2 mole ratio of adipate-glycol at 160C. Acid and ester numbers and the amount of gel fraction were determined and the reaction was continued beyond the gel point to approximately 90% polymer yields. The reaction rates and rate constants were shown to decrease with increasing distance between glycol hydroxyls from ethylene-glycol to heptaisopropyleneglycol. This distance affects the distance between crosslinks, as shown in the reaction scheme:

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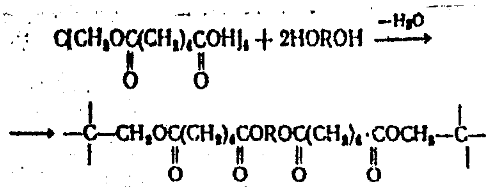
L 27789-65
ACCESSION NR: AP5004311



$$C[CH_2OC(CH_2)_4COH]_4 + 2HOROH \xrightarrow{-H_2O}$$

$$\longrightarrow -C-CH_2OC(CH_2)_4COROC(CH_2)_4\cdot COCH_2-C-$$

A large distance between the points of crosslinking and functional carboxyl groups facilitates the deformation of chains and crosslinking between chains, and therefore the gel point is reached at 35% condensation or earlier, as expected from Flory's theory. During condensation beyond the gel point, the amount of soluble fraction decreases, but the acid and ester numbers remain constant. The thermomechanical properties change during the process of condensation from those of a low-molecular liquid to high-elastic deformation properties, which disappear on further condensation. A proposed stoichiometric model relates the change in acid and ester numbers and the change in gel and soluble fractions from the point of gelation to yield and permits the graphical correlation of yield and time of polymerization. Orig. art. has: 7 figures, 3 tables and 11 formulas.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: OC

NO REF SOV: 001

OTHER: 001

Card 2/2

L 37662-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP5008116 S/0062/65/000/002/0381/0384

AUTHOR: Andrianov, K. A.; Vasil'yeva, T. V.; Kozlova, L. V.

TITLE: **Synthesis of methylphenyl (diethyl) cyclomethylphosphonoxysiloxanes**

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 2, 1965, 381-384

TOPIC TAGS: heteroorganic compound, organosilicon compound, siloxane synthesis, phosphonoxysiloxane synthesis, methylphosphonic acid, alkylchlorosilane

ABSTRACT: The preparation of cyclic methyl-, ethyl- or phenyl-substituted phosphonosiloxanes was studied experimentally by condensation of methylphosphonic acid with phenylmethyl- or diethyldiethoxysilane, [illegible] diethylsiloxanes. [illegible]

[illegible]

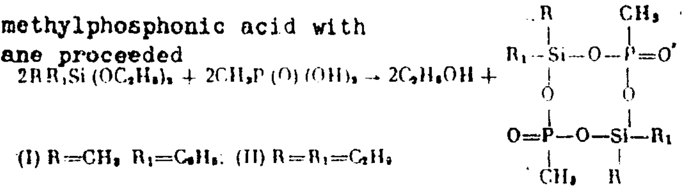
reactions were carried out with stoichiometric amounts of the components while stirring. The reaction products were identified by elemental analysis, infrared and

Cord 1/2

L 37667-65

ACCESSION NR: AP5008116

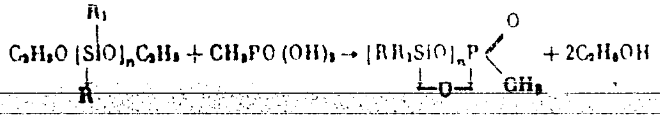
NMR-spectroscopy. The reaction of methylphosphonic acid with methylphenyl- or diethyldiethoxysilane proceeded according to the equation



$2RR_1Si(OC_2H_5)_2 + 2CH_3P(O)(OH)_2 \rightarrow 2C_2H_5OH +$

(I) $R=CH_3$, $R_1=C_6H_5$; (II) $R=R_1=C_2H_5$

and that with α, w-diethoxymethylphenyl- or α, w-diethoxydiethylsiloxanes according to the equation:



$$C_2H_5O[\overset{R_1}{\underset{R}{Si}}O]_nC_2H_5 + CH_3PO(OH)_2 \rightarrow [RR_1SiO]_nP\overset{O}{\underset{CH_3}{<}} + 2C_2H_5OH$$

(I) $R=CH_3$ $R_1=C_6H_5$ $n=2, 3, 4$; (II) $R=R_1=C_2H_5$ $n=2, 3$

to give yields of 70-80% of cyclic products. The latter distilled readily in vacuo, were viscous liquids or waxes, dissolved in aromatic hydrocarbons and hydrolized in water. Orig. art. has: 3 tables, 1 figure and 9 formulas.

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

SUBMITTED: 24Jun64 ENCL: 00 SUB CODE: OC

NO REF SOV: 004 OTHER: 000

L 48976-65 EWT(m)/EPF(c)/EPR/EWP(j)/ Pc-4/Pr-4/Ps-4 RPL WW/RM 33 31 B

ACCESSION NR: AP5009660 UR/0062/65/000/003/0446/0449

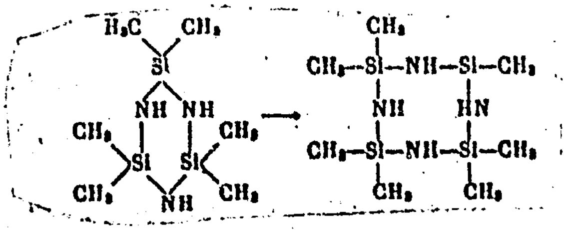
AUTHOR: Andrianov, K. A., Khananashvili, L. M., Telesheva, N. A., Tikhonov, V.S.

TITLE: Reactions of dimethylcyclosilazanes with n-butyl alcohol and n-butyl borate

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1965, 446-449

TOPIC TAGS: organoboron compound, butylborate, butanol, silicoorganic compound, cyclosilazane

ABSTRACT: The reaction of hexamethylcyclotrisilazane with n-butyl alcohol gives 1,7-dibutoxyoctamethyltetrasilazane in 74% yield and octamethylcyclotetrasilazane in 11% yield, ammonia being evolved. The formation of these compounds is due to the rearrangement of hexamethylcyclotrisilazane into octamethylcyclotetrasilazane:



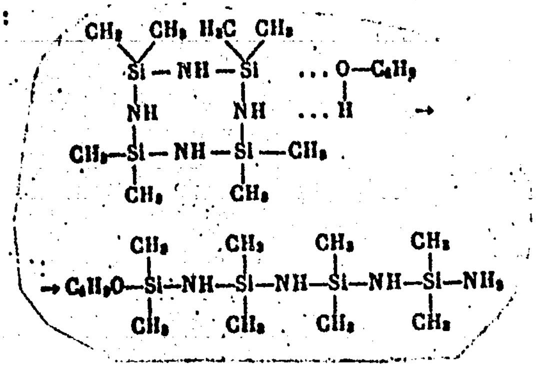
(1)

Card 1/4

L 48976-65

ACCESSION NR: AP5009660

As a result of the reaction of the alcohol with octamethylcyclotetrasilazane, the ring is then opened as follows:



(2)

Next, the amino group of the compound thus formed reacts with the alcohol, and ammonia is evolved:

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L 48976-65

ACCESSION NR: AP5009660

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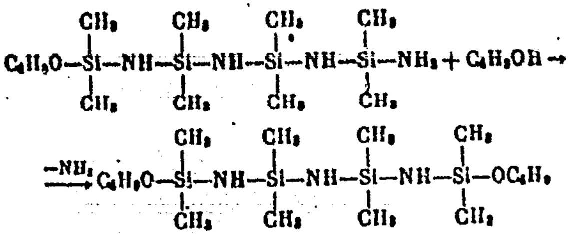

$$C_4H_9O-\underset{CH_3}{\overset{CH_3}{Si}}-NH-\underset{CH_3}{\overset{CH_3}{Si}}-NH-\underset{CH_3}{\overset{CH_3}{Si}}-NH-\underset{CH_3}{\overset{CH_3}{Si}}-NH_2+C_4H_9OH\rightarrow \quad (3)$$

$$\xrightarrow{-NH_3}C_4H_9O-\underset{CH_3}{\overset{CH_3}{Si}}-NH-\underset{CH_3}{\overset{CH_3}{Si}}-NH-\underset{CH_3}{\overset{CH_3}{Si}}-NH-\underset{CH_3}{\overset{CH_3}{Si}}-OC_4H_9$$

The reaction of hexamethylcyclotrisilazane with n-butyl borate produced dimethyldibutoxysilane, 1,3-dibutoxytetramethyldisilazane, and 1,5-dibutoxyhexamethyltrisilazane. Octamethylcyclotetrasilazane, on reacting with n-butyl borate, formed dimeth[illegible]butoxysilane and 1,5-dibutoxyhexamethyltrisilazane. The procedures used are des[illegible] "The authors express their appreciation to M. G. Zaytseva, who recorded the [illegible]." Orig. art has: 2 tables and 3 formulas.

ASSOCIATION: Institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Institute of Fine Chemical Technology)

Card 3/4

L 38637-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM

ACCESSION NR: AP50083[illegible] S/0190/65/007/003/0517/0522

AUTHORS: Andrianov, K. A.; Yemel'yanov, V. N.

TITLE: Three-dimensional condensation of silicon-bearing alcohols with tetrafunctional acid esters

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 3, 1965, 517-522

TOPIC TAGS: condensation reaction, ester, thermomechanical property, silicon

ABSTRACT: Several kinetic relations were determined in the three-dimensional polycondensation of acid esters having the general formula $C[CH_2OCO(CH_2)_nCOOH]_4$ with tris(β-hydroxyethoxymethyldimethylsiloxy)ethyl(phenyl)silanes. It was found [illegible] with increase in spacing between the carboxyl groups in the acid esters. The rate decreases also when the ethyl group is substituted for the phenyl group in the silicon-organic alcohol. It was discovered that the capacity for tetrafunctional acid esters to combine with silicon-organic alcohols increases with decrease in content of the carboxyl groups in the acid esters and with replacement of the ethyl radical for the phenyl in the silicon-organic alcohol. Polycondensation beyond the

Card 1/2

L 38637-65
ACCESSION NR: AP5008377

point of polymer condensation leads to systematic decline in content of the dissolved fraction, but the acid numbers of the dissolved fraction remain constant at all stages of polycondensation. The silicon-bearing polyesters of three-dimensional ring structures are elastic and transparent. The thermomechanical properties were plotted; at low stages of condensation (up to 40%), the thermomechanical curves have a form characteristic of low-molecular vitrifying liquids. With further development of polycondensation, a zone of highly elastic strain [illegible] Succeeding development of three-dimensional structure leads to the formation of polymers with no zone of highly elastic strain. Orig. art. has: [illegible] figures and 2 tables.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy, AN SSSR (Institute of Hetero-Organic Compounds, AN SSSR)

SUBMITTED: 08Jun64 ENCL: 00 SUB CODE: OC, MT

NO REF SOV: 007 OTHER: 001

Card 2/2

L 44177-65 EPF(c)/EWT(m)/T Pr-4 DJ

ACCESSION NR: AP5011690 UR/0065/65/000/005/0043/0045

30

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13

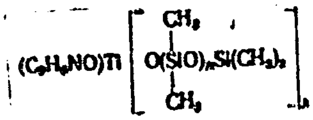
AUTHOR: Andrianov, K. A.; Lavygin, I. A.; Tubyanskaya, G. S.; Kobzova, R. I.; Oparina, Ye. M.

TITLE: New heat-resistant lubricating oils and additives

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 5, 1965, 43-45

TOPIC TAGS: silicone, polydimethylsiloxane, additive, thermal oxidative stability, titanium/PMS 100, PMS 400

ABSTRACT: The effect of the presence of 8-hydroxyquinolyl-substituted titanium atoms in the backbone of polyorganosiloxanes on their thermal-oxidative stability has been studied to determine the suitability of such compounds as high-temperature lubricants. To this end, a number of oligomers of the general formula

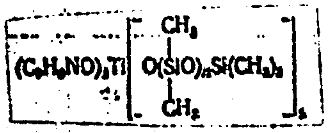


$$(C_9H_6NO)Ti\left[O(\overset{CH_3}{\underset{CH_3}{Si}}O)_nSi(CH_3)_3\right]_3 \qquad (1)$$

Card 1/3

L 44177-65
ACCESSION NR: AP5011690

and various degrees of polymerization were prepared by the condensation of (8-hydroxyquinolyl)tris(butoxy)titanium with α-hydroxy-ω-(trimethylsiloxy)polydimethylsiloxanes. The new oligomers and the conventional polydimethylsiloxanes, PMS-100 and -400, were subjected to comparative friction tests and thermal-oxidative stability determinations. The criterion of thermal stability was the gelation time at 300C. The results, presented in graphic and tabular form, indicated that gelation time was depenoent on the (8-hydroxyquinolyl)titanoxane group concentration and was maximum at 0.18—0.30% Ti in the oligomer. The new oligomers equaled the polydimethylsiloxanes in lubricating properties and exceeded them in thermal-oxidative stability. For example, at 0.2—0.3% Ti, this stability surpassed that of PMS-100 by a factor of 23. In addition, it was shown that both oligomers of branched structure (1) and oligomers of the linear structure



$$(C_9H_6NO)_3Ti\left[O(\underset{CH_3}{\overset{CH_3}{|}}SiO)_nSi(CH_3)_3\right] \qquad (2)$$

also very

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L 44177-65
ACCESSION NR: AP5011690

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are also very effective inhibitors of thermal-oxidative degradation of polydimethylsiloxanes. Orig. art. has: 4 figures, 1 table, and 2 formulas. [SM]

ASSOCIATION: INEOS, VNII NP

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NO REF SOV: 001	OTHER: 000	ATD PRESS: 3241

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Card 3/3

L 29105-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5003962 S/0079/65/035/001/0103/0106

AUTHORS: Andrianov, K. A.; Sidorov, V. I.; Khananashvili, L. M.; Nikitina, N. N.

TITLE: Synthesis of organic cyclosiloxanes containing unsaturated groups at the silicon atom

23
22
B

SOURCE: Zhurnal obshchey khimii, v. 35, no. 1, 1965, 103-106

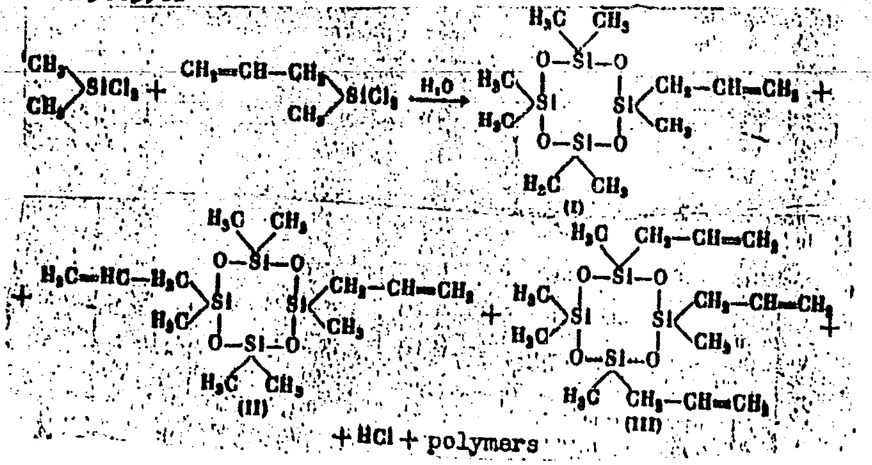
TOPIC TAGS: silicon, siloxane, cyclotetrasiloxane, hydrogen, vinyl, mechanical property

ABSTRACT: Compounds containing various numbers of allyl groups at the silicon atom in eight-member and six-member siloxane rings and cyclotetrasiloxane containing hydrogen and vinyl groups at various silicon atoms were synthesized. Simultaneous co-hydrolysis of methallyl dichlorsiloxane and dimethyl dichlorsilane in etheric solution yields six-member and eight-member cyclosiloxanes as shown by

Card 1/3

L 29105-65

ACCESSION NR: AP5003962



The IR spectra and the mechanical properties of the synthesized products are shown in Table 1 on the Enclosure. Orig. art. has: 1 table and 1 formula.

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

SUBMITTED: 28Oct63 ENCL: 01 SUB CODE: OC

NO REF SOV: 002 OTHER: 014

Card 2/3

L 29105-65

ACCESSION NR: AP5003962 ENCLOSURE: 01

Table 1

Nr of compound	Name of synthetized compound	Boil.pt (p mm)	n_D^{20}	d_4^{20}	MR_D	
					found	calc.
I	Heptamethyl allyl cyclotetrasiloxane	41° (3)	1.4119	0.9616	83.31	83.61
II	Hexamethyl diallyl cyclotetrasiloxane	57-58 (3)	1.4243	0.9684	91.78	92.10
III	Pentamethyl triallyl cyclotetrasiloxane	82 (3)	1.4347	0.9738	100.38	100.85
IV	Methyltetraethyl allyl cyclotrisiloxane	70-72 (1)	1.4340	0.9615	82.19	82.93
V	Dimethyldiethyl diallyl cyclotrisiloxane	67-69 (1)	1.4375	0.9629	82.12	82.88
VI	Tetramethyl trivinyl cyclotetrasiloxane	49 (5)	1.4247	0.9919	81.94	82.67

Card 3/3

L 2265[illegible]-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM
ACCESSION NR: AP500[illegible]550 [illegible] 0328/0330

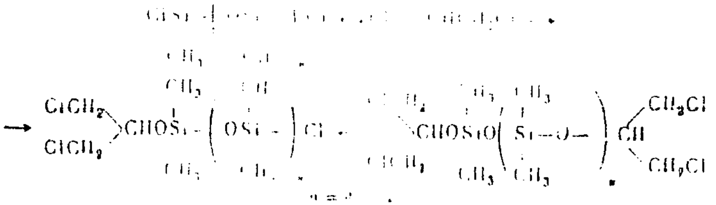
AUTHOR: Andrianov, K. A.; Kurakov, G. A.; Khananashvili, L. M.

TITLE: The reaction of epichlorohydrin with alpha, omega-dichloropolydimethylsiloxanes

SOURCE: Zhurnal obshchey khimii, v. 35, no. 2, 1965, 328-330

TOPIC TAGS: silicoorganic compound, epichlorohydrin, siloxane, chlorodimethylsiloxane

ABSTRACT: The reaction of epichlorohydrin with dimethyldichlorosilane, 1,3-dichlorotetramethyldisiloxane and 1,5-dichlorohexamethyl[illegible] was studied experimentally. Epichlorohydrin reacted with [illegible] dichloropolydimethylsiloxane as follows:



Card 1/2

L 32651-65

ACCESSION NR: AP5005550

2

to give α,ω-chloro(dichloroisopropoxy)-and α,ω-bis-(dichloropropoxy)polydimethylsiloxane, respectively. The reaction [illegible] increase in the [illegible]

[illegible]

spectroscopy. Calculated and experimental compositions, boiling points, refractive indices and densities of the six reaction products are tabulated. "L. M. Bakulina took part in the work." Orig. art. has: [illegible] tables and 1 formula.

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

SUBMITTED: 06Dec63 ENCL: 00 SUB CODE: OC

Card 2/2

L 24313-66 EWT(m)/EWP(j) RM

ACC NR: AP6009793 SOURCE CODE: UR/0062/66/000/002/0257/0262

AUTHOR: Andrianov, K. A.; Dabagova, A. K. Golova, M. I. 3/ B

ORG: Institute of Organoelemental Compounds, Academy of Sciences, SSSR (Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR)

TITLE: The methacrylation of (chloromethyl) ethoxysilanes in the presence of catalytic amounts of acid

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 2, 1966, 257-262

TOPIC TAGS: chemical reaction, reaction mechanism, organosilicon compound, siloxane

ABSTRACT: The nucleophilic substitution of the chlorine of the α-chloromethyl group of ethozysilane with a methacrylic group was investigated. The reaction will go in the absence of solvents, but it proceeds more readily, giving high yields at lower temperatures, in the presence of catalytic amounts of HCl or organic acids. The proposed reaction mechanism -- formation of an intermediate reaction product with the acid catalyst and decomposition of this oxonium compound by heating -- was confirmed experimentally. The following new compounds were

2

Card 1/2 UDC: 542.91+546.287

L 24313-66

ACC NR: AP6009793

synthesized and characterized: (acetoxymethyl)dimethylethoxysilane, (acetoxymethyl)methyldiethoxysilane, and (acetoxymethyl)triethoxysilane. Orig. art. has: 5 tables and 5 equations.

SUB CODE: 07/ SUBM DATE: 02Sep63/ ORIG REF: 001

Card 2/2 W

ACC NR: AP7004762 SOURCE CODE: UR/0413/67/000/001/0074/0074

INVENTOR: Andrianov, K. A.; Yakushkina, S. Ye.; Vardosanidze, Ts. N.

ORG: none

TITLE: Preparative method for straight-chain high molecular weight organosilicon elastomers. Class 39, No. 190022 [announced by Institute of Heteroorganic Compounds, AN SSSR (Institut elementoorganicheskikh soyedineniy AN SSSR)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1967, 74

TOPIC TAGS: elastomer, silicone, polysiloxane, heat resistant material, organosilicon compound, organotitanium compound

ABSTRACT: An Author Certificate has been issued for a preparative method for straight-chain high-molecular-weight organosilicon elastomers. The method involves polymerization of alkylarylcyclosiloxanes in the presence of alkali hydroxide catalysts. To produce elastomers with enhanced heat resistance, the starting material used is a mixture of arylalkylcyclosiloxanes with tris[(trimethylsiloxy)polydimethylsiloxano](8-quinolinolato)titanium or with (dimethylsiloxano)bis(8-quinolinolato)titanium. [SM]

SUB CODE: 11, 07/ SUBM DATE: 07Jun65/

Card 1/1 UDC: 678.84

L 23583-66 EWT(m)/EWP(j)/T IJP(c) RM

ACC NR: AP6007117 (A) SOURCE CODE: UR/0079/66/036/002/0341/0345

AUTHOR: Andrianov, K. A.; Izmaylov, B. A.

25

B

ORG: none

TITLE: Hydrolytic polycondensation of higher alkyltrichlorisilanes

SOURCE: Zhurnal obshchey khimii, v. 36, no. 2, 1966, 341-345

TOPIC TAGS: organosilicon compound, polycondensation, hydrolysis

ABSTRACT: Reactions of hydrolytic polycondensation of hexyl-, heptyl-, octyl-, and isononyltrichlorosilane were investigated. The hydrolysis was found to differ considerably from that of lower alkyltrichlorosilanes. Even when carried out in an acid medium, the initial products contained a large number of hydroxyl groups. The reaction is represented as follows:

$$nRSiCl_3 + 3nH_2O \longrightarrow \underset{(I-IV)}{[RSiO(OH)]_n} + 3nHCl$$

(I) $R = C_6H_{13}$, $n = 8$; (II) $R = C_7H_{15}$, $n = 6$; (III) $R = C_8H_{17}$; $n = 6$; (IV) $R = C_9H_{19}$, $n = 8$.

The products were polymeric compounds of relatively low molecular weight. In order to achieve a complete condensation of the hydroxyl groups, compounds (I-IV) were distil-

Card 1/2 UDC: 546.287

L 23583-66

ACC NR: AP6007117

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led under a high vacuum; this produced low-molecular three-dimensional rings, silsesquioxanes, which are viscous liquids soluble in benzene, toluene, and ether. The IR spectra of the silsesquioxanes showed the presence of an absorption band at 1125 cm^{-1}, which was attributed to the stretching vibration of the Si-O-Si bond. The experimental data indicate that the higher alkyltrichlorosilanes have a much greater tendency toward intramolecular condensation during hydrolytic condensation than lower alkyltrichlorosilanes, in which hydrolytic condensation also readily occurs intermolecularly. The intramolecular character of the process is attributed to pronounced steric hindrance effects due to bulky radicals; this accounts for the formation of ring structures instead of polymers. Orig. art. has: 3 tables.

SUB CODE: 07/ SUBM DATE: 18Jan65/ ORIG REF: 003/ OTH REF: 002

Card 2/2 PB

L 25629-66 EWT(m)/EWP(j)/T DJ/RM

ACC NR: AP6015645 (A) SOURCE CODE: UR/0413/66/000/009/0055/0055

INVENTOR: Andrianov, K. A.; Vasil'yev, Yu. N.; Vorob'yev, Yu. F.; Kolesnikov, S. A.; Sigarev, A. M.; Khananashvili, L. M.

39
8

ORG: none

TITLE: Antifriction lubricant. Class 23, No. 181222

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9, 1966, 55

TOPIC TAGS: molybdenum disulfide, solid lubricant, silicone lubricant

ABSTRACT: An Author Certificate has been issued for an antifriction lubricant based on molybdenum disulfide. To improve its quality, the lubricant is formulated to include petroleum coke, and polymethylphenylsiloxane and polyaluminophenylsiloxane resins. [SM]

SUB CODE: 11/ SUBM DATE: 06Mar65/ ATD PRESS: 4256

Card 1/1 UDC: 621.893

2

L 32652-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM S/0079/65/035/002/0330/0333 18 8

ACCESSION NR: AP5005551

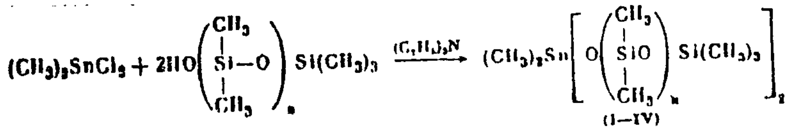
AUTHOR: Andrianov, K. A.; Yakushkina, S. Ya.
[redacted]

TITLE: Synthesis of linear and branched oligomeric polydimethylstannosiloxanes

SOURCE: Zhurnal obshchey khimii, v. 35, no. 2, 1965, 330-333

TOPIC TAGS: silicoorganic compound, stannosiloxane synthesis, linear oligomer, branched oligomer, dimethylsiloxane, dimethylstannane, glass transition

ABSTRACT: Linear and branched, liquid, oligomeric polydimethylstannosiloxanes with a central tin atom were synthesized and their physical properties were determined. Linear oligomers were obtained from α-hydroxy-ω-trimethylsiloxydimethylsiloxane (I) and dimethyldichlorostannane in the presence of triethylamine as the acceptor of HCl in dry benzene solution by the reaction:



$$(CH_3)_2SnCl_2 + 2HO\left(\overset{CH_3}{\underset{CH_3}{Si}}-O\right)_n Si(CH_3)_3 \xrightarrow{(C_2H_5)_3N} (CH_3)_2Sn\left[O\left(\overset{CH_3}{\underset{CH_3}{SiO}}\right)_n Si(CH_3)_3\right]_2$$

(I—IV)

(I) $n = 30$, (II) $n = 60$, (III) $n = 34$, (IV) $n = 150$.

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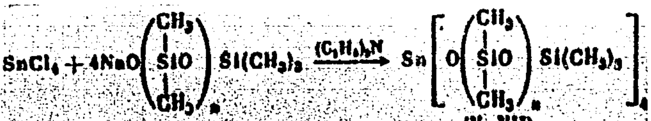
ACCESSION NR: AP5005551

or α-dichloro-ω-trimethylsiloxydimethylsiloxane (II) was cohydrolyzed with dimethyldichlorostannane to give such linear oligomers. Branched oligomers of the type of tetrakis (dimethylsiloxanotrimethylsiloxy) stannanes were prepared by hydrolysis of (II) with stannic chloride or from stannic chloride and the sodium salt of (I) by the reaction:



$$SnCl_4 + 4NaO\left(\begin{matrix}CH_3\\ |\\ SiO\\ |\\ CH_3\end{matrix}\right)_n Si(CH_3)_3 \xrightarrow{(C_2H_5)_3N} Sn\left[O\left(\begin{matrix}CH_3\\ |\\ SiO\\ |\\ CH_3\end{matrix}\right)_n Si(CH_3)_3\right]_4$$

(V–VII)

(V) n = 10, (VI) n = 24, (VII) n = 80,

Reacting tetraethoxystannane with (I) yielded the ethyl ether of I instead of the expected branched oligomeric stannosiloxane. Dimethyldichlorostannane was prepared by a published method by disproportionation of tetramethyltin with stannic chloride, and (II) was obtained by telomerization of octamethylcyclo-tetrasiloxane with trimethylchlorosilane. The produced oligomeric stannosiloxanes had glass transition points of -100 to -120C, their density decreased with increasing chain length, and the linear oligomers had higher viscosities and specific weights than the branched ones. Orig. art. has: 3 formulas.

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L 32652-65

ACCESSION NR: AP5005551

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ASSOCIATION: None

SUBMITTED: 29Apr63 ENCL: 00 SUB CODE: OC

NO REF SOV: 005 OTHER: 002

Card 3/3

L 32653-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM
ACCESSION NR: AP5005552 S/0079/65/035/002/0333/0335

AUTHOR: Andrianov, K. A.; Izmaylov, B. A.

32
B

TITLE: Rearrangements of organocyclosilazanes

SOURCE: Zhurnal obshchey khimii, v. 35, no. 2, 1965, 333-335

TOPIC TAGS: silicoorganic compound, cyclosilazane, organocyclosilazane, silazane rearrangement, chloride catalyst, cyclosilazane polymerization

ABSTRACT: The effect of aluminum chloride, titanium tetrachloride, stannic chloride and phenyltrichlorosilane on the rearrangement of hexamethylcyclotrisilazane and octamethylcyclotetrasilazane was studied experimentally. Hexamethylcyclotrisilazane and 0.3-3.0% aluminum chloride gave, after 5 hrs. heating at 140-240C, 6-20% octamethylcyclotetrasilazane and 17-60% polymer, rearrangement and polymerization both increasing with temperature and the amount of reagent. Yields of 5.85, 29, and 30% octamethylcyclotetrasilazane were obtained with 1.9% titanium tetrachloride, 1.1% stannic chloride, and 2.0% phenyltrichlorosilazane by heating of hexamethylcyclotrisilazane for 5-8hrs. at 240, 195, and 230C, respectively. Octamethylcyclotetrasilazane and 0.54% aluminum chloride gave 28% hexamethylcyclo-

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ACCESSION NR: AP5005552

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trisilazane in 6 hrs. at 160C. Thus, rearrangement of dimethylcyclosilazanes with simultaneous polymerization was shown to proceed in the presence of the studied reagents and to involve both the widening and contraction of rings. Rearrangements of organocyclosilazanes had been previously observed in the presence of ammonium chloride and of alkali.

ASSOCIATION: None

SUBMITTED: 29Apr63 ENCL: 00 SUB CODE: OC

NO REF SOV: 003 OTHER: 002

Card 2/2

L 57009-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5010792

UR/0079/65/035/004/0698/0700
546.287 : 542.938 23
22
B

AUTHORS: Andrianov, K. A.; Sidorov, V. I.; Khananashvili, L. M.; Kuznetsova, N. V.

TITLE: Cohydrolysis reaction of methylallyldichlorosilane with methyl- and ethyldichlorosilanes

SOURCE: Zhurnal obshchey khimii, v. 35, no. 4, 1965, 698-700

TOPIC TAGS: silane, esterification

ABSTRACT: Cohydrolysis of methylallyldichlorosilane (A) with methyldichlorosilane (B), mole ration 0.5:1, leads to the formation of 1-allyl-1,3,5,7-tetramethylcyclotetrasiloxane (I). Yield is 10.5% and 1,5-diallyl-1,3,5,7-tetramethylcyclotetrasiloxane (II) yield is 23.9%. For mole ratio A:B = 1:0.5 along with II, 3,5,7-triallyl-1,3,5,7-tetramethylcyclotetrasiloxane (III) was also obtained (yield 18.0%). Cohydrolysis of A with ethyldichlorosilane (C) yielded: for mole ratio A.C = 1:1, 1-methyl-1-allyl-3,5,7-triethylcyclotetrasiloxane (IV), yield 6%, and 1-ethyl-3,5,7-trimethyl-3,5,7-triallylcyclotetrasiloxane (VI), yield 19.5%. For mole ratio of A:C = 1:0.5 the compounds 1,5-dimethyl-1,5 diallyl-3,7-diethylcyclotetrasiloxane (V), yield 15.6% and VI, yield 19.5%, were formed. The authors thank M. G. Zaytseva for the determination of the IR spectra. Orig. art. has: 3 formulas and 1 table.

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L 57009-65

ACCESSION NR: AP5010792

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

SUBMITTED: 10Feb64

ENCL: 00

SUB CODE: OC

NO REF SOV: 004

OTHER: 004

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L 58961-65 EPF(c)/EWP(j)/EWP(k)/EWP(z)/EWT(m)/T/EWP(b)/EWP(e)/EWP(t) Pc-4/Pf-4/
ACCESSION NR: AP5016375 Pr-4 IJP(c) RM/JD UR/0064/65/000/006/0468/0470
661.718.5: 66.096.5.084

AUTHOR: Trofimova, I.V.; Andrianov, K.A.; Estrina, M.A.; Zil'berg, G.A. 41 B

TITLE: Synthesis of methylchlorosilanes 7 in a fluidized bed 18 with the use of vibration

SOURCE: Khimicheskaya promyshlennost', no. 6, 1965, 468-470

TOPIC TAGS: organosilicon compound, vibration, fluidized bed, chlorosilane synthesis, silicon powder, copper powder

16 17 27

ABSTRACT: Experiments involving powdered silicon-copper alloys and also mixtures of silicon and copper powder were carried out in order to determine the hydrodynamic characteristics of a fluidized bed with the use of vibration. The latter reduces the critical rate of fluidization w_k by a factor of 1.5-2, and the critical rate in the presence of vibration, w_k^v, decreases with the diameter of the tube in which the process takes place. Optimum conditions of the process were determined (lowest critical rate of fluidization, $w_k^v = 0.35$ cm/sec, for 75-100 μ particles and a tube diameter of 40 mm). On the basis of the data obtained, a synthesis of methylchlorosilanes was carried out with various silicon-copper contact masses, using methyl chloride. The composition of

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ACCESSION NR: AP5016375

the mixture of methylchlorosilanes produced was determined by gas-liquid chromatography with a KhL-3 instrument. The process was very reproducible when vibration was employed. The conversion of methyl chloride reached 35-55%, as compared to 5-10% in synthesis with a fluidized bed without vibration. Owing to a good mass and heat exchange, even at low linear gas flow rates, the reproducibility and content of dimethylchlorosilane are very satisfactory. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: OC

NO REF SOV: 007 OTHER: 000

Card 2/2

L 17534-65
ACCESSION NR: AP4044197

O

Thus, P or Be, added to the alloy together with a promoter (Zn), significantly improved the catalyst properties of the Cu-Si alloys, reducing synthesis temperature by 20-40 degrees while increasing the yield of dimethyldichlorosilane to 75%. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 03May63 ENCL: 00

SUB CODE: MM, GC NR REF SOV: 003 OTHER: 001

Card 2/2