68168
SOV/20-129-6-35/69

The Dielectric Constants and the Dipole Moments of Some Organosilicon Com-
pounds   moments were calculated according to G. Hedestrand (Ref 4)
(Table 3). Hitherto, only the data of hexamethyl- and hexaethyl
disiloxane had been known. The values found by the authors for
these two compounds agree with the data published in literature.
The nearly equal values of the dipole moments for the derivatives
of disilane methane and disilane ethane show that they are not
influenced by the length of the chain and the nature of the al-
kyl molecules. In disiloxane derivatives the dipole moment de-
creases with an increase in the molecular weight of the alkyl
radicals, whereas in the linear polyethyl siloxanes
$(C_2H_5)_3SiO[(C_2H_5)_2SiO]_nSi(C_2H_5)_3$ the dipole moments increase
with an increase in molecular weight and follow the empirical
equation: $\mu = 0.63\sqrt{n + 1}$ (μ = dipole moment, n = number of
oxygen atoms). There are 3 tables and 7 references, 2 of which
are Soviet.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti
I. M. Gubkina (Moscow Institute for the Petroleum-chemical
and Gas Industry I. M. Gubkin)

SUBMITTED: August 10, 1959
Card 2/2

5.3700

70205
SOV/79-30-3-37/69

AUTHORS: Topchiyev, A. V., Nametkin, N. S., Durgar'yan, S. G.

TITLE: Addition of Trichlorosilane to Trialkyl-(phenyl, chloro)-
              -allylsilanes. Certain Silicon Hydrocarbons of
              Disilanepropane Series

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 3,
              pp 927-932 (USSR)

ABSTRACT: Addition of trichlorosilane to trialkyl-phenyl,
              chloro-allylsilanes in the presence of benzoyl
              peroxide and chloroplatinic acid was studied. The
              addition products of trichlorosilane to monoallyl
              derivatives of silicon are given in Table 2.
              The activity of the double bond in monoallyl
              derivatives of silicon increases with the increasing
              size of alkyl radicals, and with substitution by
              phenyl radicals or chlorine atoms. The reaction of
              chloro derivatives of disilanepropane, prepared by
              addition of trichlorosilane to monoallyl derivatives
Card 1/6   of silicon, with alkyllithium yields hexaalkyl

Addition of Trichlorosilane to Trialkyl-
(phenyl, chloro)-allylsilanes. Certain
Silico arbons of Disilanepropane
Series

78293

SOV/79-...

Table 2

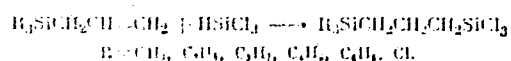| 2	3	4	% Cl		7	
			5	6	8	9
						H,Pt Cl_6·6H_2O
1	(CH_3)_3SiCH_2CH_2CH_2SiCl_3	187–189° (742)	42.63	42.38 42.53	2.5 *	50.6
2	(C_2H_5)_3SiCH_2CH_2CH_2SiCl_3	126–127 (5)	36.48	36.26 36.41	40.0 *	51.2
3	(C_3H_7)_3SiCH_2CH_2CH_2SiCl_3	167–169 (12)	31.89	31.89 32.17	3.4	59.2
4	(C_4H_9)_3SiCH_2CH_2CH_2SiCl_3	176–178 (4)	28.32	28.25 27.88	13.2	61.9
5	(C_5H_11)_3SiCH_2CH_2CH_2SiCl_3	237–239 (2)	24.59	24.46 24.20	20.1	68.3
6	(CH_3)_2C_6H_5SiCH_2CH_2CH_2SiCl_3	153–155 (7)	34.19	33.85 33.79	22.0	57.2
7	Cl_3SiCH_2CH_2CH_2SiCl_3	116.5–118 (5)	68.45	68.76 68.94	62.2	80.8

Key to Table 2:   (1) Trialkyl(aryl)trichlorodisilane-
propanes; (2) Nr; (3) Compound; (4) bp (pressure in
mm); (5) Found; (6) Calculated; (7) Yield (%); (8)
benzoyl peroxide $(C_6H_5CO)_2O_2$; (9) Chloroplatinic acid.

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Addition of Trichlorosilane (phenyl, chloro)-allysilanes, Certain
Silicon Hydrocarbons of Disilanepropane
Series

78263
SOV/79-30-3-37/59

(phenyl) derivatives of disilanepropane. Their
physicochemical constants are shown in Table 3.
The infrared spectra of the hexalkyl(phenyl) derivatives
of disilanepropane indicate that the addition of
trichlorosilane to trialkyl-(phenyl, chloro)-allysilanes
occurs contrary to Markownikoff's rule.

$$R_3SiCH_2CH=CH_2 + HSiCl_3 \longrightarrow R_3SiCH_2CH_2CH_2SiCl_3$$
$$R = CH_3, C_2H_5, C_3H_5, C_2H_5, C_6H_5, Cl.$$

There are 3 tables; and 17 references, 5 Soviet,
6 U.S., 5 Japanese, 1 U.K. The 5 most recent U.S.
references are: Sommer, L. H., Mackey, F. P., et al.,
J. Am. Chem. Soc., 79, 2764 (1957); Speier, J. L.,
Webster, J. A., J. Am. Chem. Soc., 78, 1044 (1956);
Spier, J. L., Webster, J. A., Barnes, G. H., J. Am.
Chem. Soc., 1, 70 (1956); Sommer, L. H., Pietrusza,
E. W., Whitmore, F. C., J. Am. Chem. Soc., 69, 188

Card 3/6

Addition of Trichlorosilane to Trialkyl-
(phenyl, chloro)-allylsilanes.   Certain
Silicon Hydrocarbons of Disilanepropane
Series

78283
SOV/79-30-3-37/69

Table 3.   Hexalkyl(phenyl) derivatives of disilane-
propane.

2	3	4	n_D	d
1	(CH₃)₃SiCH₂CH₂CH₂Si(CH₃)₃	167–169 (758)	1.4318	0.7..
2	(C₂H₅)₃SiCH₂CH₂CH₂Si(C₂H₅)₃	140–141 (3)	1.3572	0.8..
3	(C₃H₇)₃SiCH₂CH₂CH₂Si(C₃H₇)₃	182–183 (4)	1.4580	0.82..
4	(C₆H₅)₃SiCH₂CH₂CH₂Si(C₆H₅)₃	216–218 (3.5)	1.4624	0.830
5	(C₆H₅)₃SiCH₂CH₂CH₂Si(C₆H₅)₃	m.p. 120–121°		
6	(CH₃)₃SiCH₂CH₂CH₂SiC₂H₅)₃	116–118 (8)	1.4730	0.7980
7	(CH₃)₃SiCH₂CH₂CH₂SiC₃H₇)₃	147–148 (5)	1.4461	0.8033
8	(CH₃)₃SiCH₂CH₂CH₂SiC₆H₅)₃	170–172 (8)	1.4494	0.8162
9	(CH₃)₃SiCH₂CH₂CH₂SiC₆H₅)₃	219–221 (4) m.p. 71–72°		

Card 4/6

Addition of Trichlorosilane to Trialkyl-
(phenyl, chloro)-allysilanes. Certain
Silicon Hydrocarbons of Disilanepropane
Series

78283
SOV/79-30-3-37/69

Table 3.

MR_D		7		8	
5	6	('	:1	('	11
63.09	63.06	57.22, 57.51	12.74 12.72	57.37	12.84
89.28	90.12	66.10, 66.23	13.35, 13.53	66.10	13.31
118.25	118.62	70.77, 70.81	13.62, 13.60	70.70	13.56
146.06	145.92	73.55, 73.59	13.51, 13.60	73.55	13.72
—	—	83.63, 83.65	6.44, 6.30	83.52	6.47
76.58	76.95	62.76, 62.67	13.26, 13.21	62.53	13.11
90.50	90.84	66.09, 66.18	13.37, 13.42	66.09	13.31
104.35	104.39	68.72, 68.86	13.52, 13.42	68.70	13.45
—	—	76.85, 76.84	7.80, 7.50	76.94	8.07

Key to Table 3:   (2) Nr; (3) Compound; (4) bp
(pressure in mm); (5) Found; (6) Calculated; (7)
Found (%); (8) Calculated (%).

Card 5/6

Addition of Trichlorosilane to Trialkyl-
(phenyl, chloro)-allysilanes. Certain
Silicon Hydrocarbons of Disilanepropane
Series

78283
SOV/79-30-3-37/89

(1947) ; Burkhard, C. A., Krieble, K. H., J. Am.
Chem. Soc., 69, 2867 (1947).

ASSOCIATION: Institute of Petrochemical Synthesis of the Academy
of Sciences of the USSR (Institut neftekhimicheskogo
sinteza Akademii nauk SSSR)

SUBMITTED: August 31, 1958

Card 6/6

82679

5.3700

S/079/60/030/008/003/008
B004/B064

AUTHORS: Nametkin, N. S., Topchiyev, A. V., Durgar'yan, S. G.,
             Kuz'mina, N. A.

TITLE: The Addition of Trichlorosilane[1] to Dialkyl(Phenyl,Chloro)
             Diallyl Silane. Some Silicon Hydrocarbons Obtained From
             the Addition Products

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 8,
             pp. 2594 - 2600

TEXT: The authors proceeded on the basis of the reaction published in
Ref. 2: $R_2Si\diagup^{CH=CH_2}_{\diagdown CH=CH_2} + HSiCl_3 \rightarrow R_2Si\diagup^{CH_2CH_2SiCl_3}_{\diagdown CH_2CH_2SiCl_3}$. They carried out this
reaction with diallyl compounds. Benzoyl peroxide, platinum on coal, and
platinum hydrochloric acid were used as catalysts. The two latter de-
veloped a greater activity in this connection. The activity of the double
bond in the dialkyl(phenyl,chloro)diallyl silanes increased both with
the size of the alkyl radicals and also with their substitution by

Card 1/3

82679

The Addition of Trichlorosilane to   S/079/60/030/008/003/008
Dialkyl(Phenyl,Chloro)Diallyl Silane.   B004/B064
Some Silicon Hydrocarbons Obtained From the Addition Products

phenyl radicals or chlorine. The infrared spectra proved that the addi-
tion takes place against the Markovnikov rule. Physical data, analyses,
and yields are mentioned as follows: Table 1: $R_2Si(CH_2CH=CH_2)_2$, where

$R = CH_3$, C_2H_5, C_3H_7, C_4H_9; $(C_6H_5)_2Si(CH_2CH=CH_2)_2$; $(CH_3)C_6H_5Si(CH_2CH=CH_2)_2$

and $Cl_2Si(CH_2CH=CH_2)_2$. Table 2: $R_2(CH_2=CHCH_2)Si(CH_2)_3SiCl_3$ (R as in

Table 1); $(C_6H_5)_2(CH_2=CHCH_2)Si(CH_2)_3SiCl_3$; $C_6H_5(CH_3)(CH_2=CHCH_2)Si(CH_2)_3-$

$-SiCl_3$ and $Cl_2(CH_2=CHCH_2)Si(CH_2)_3SiCl_3$; Table 3: $R_2Si(CH_2CH_2CH_2SiCl_3)_2$

and the corresponding C_6H_5-, $C_6H_5(CH_3)-$ and Cl_2 compounds; Table 4:

$(CH_3)_2Si[(CH_2)_3Si(CH_3)_3]_2$, the corresponding C_2H_5-, C_3H_7-, C_4H_9-, and

C_6H_5 compounds, further $(CH_3)_2Si[(CH_2)_3Si(C_2H_5)_3]_2$,

$(CH_3)_2Si[(CH_2)_3Si(C_3H_7)_3]_2$, $(CH_3)_2Si[(CH_2)_3Si(C_4H_9)_3]_2$,

$(CH_3)_2Si[(CH_2)_3Si(C_6H_5)_3]_2$, $CH_3(C_6H_5)Si[(CH_2)_3Si(CH_3)_3]_2$,

Card 2/3

82679

The Addition of Trichlorosilane to   S/079/60/030/008/003/008
Dialkyl(Phenyl,Chloro)Diallyl Silane.   B004/B064
Some Silicon Hydrocarbons Obtained From the Addition Products

$CH_3(C_6H_5)Si[(CH_2)_3Si(C_6H_5)_3]_2$, and $(C_6H_5)_2Si[(CH_2)_3Si(CH_3)_3]_2$.
There are 4 tables and 3 references: 2 Soviet and 1 Japanese.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
              (Institute of Petroleum-chemical Synthesis of the
              Academy of Sciences USSR)

SUBMITTED: August 31, 1959

Card 3/3

S/079/60/030/008/004/008
B004/B064

AUTHORS: Durgar'yan, S. G., Yegorov, Yu. P., Nametkin, N. S.,
             Topchiyev, A. V.

TITLE: Determination of the Structure of a Series of Organo-
             silicon Compounds Obtained by Adding Trichlorosilane to
             Mono- and Diallyl Derivatives of Silicon by Infrared
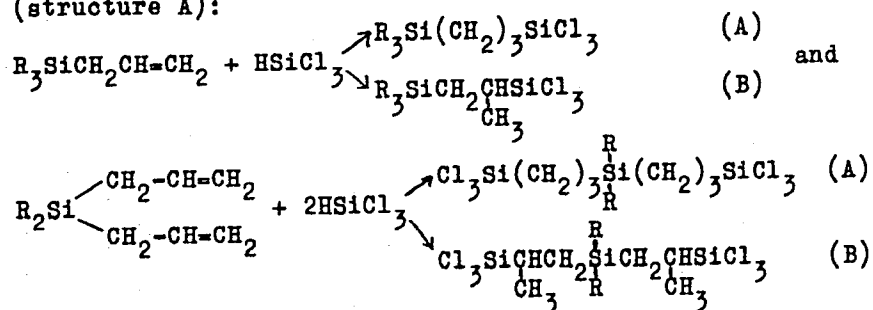   Spectroscopy

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 8,
             pp. 2600 - 2608

TEXT: The following compounds were investigated (Table 1):
$R_3Si(CH_2)_3SiR_3$, where R = CH_3, C_2H_5, C_3H_7, C_4H_9, C_6H_5, and Cl;
$(CH_3)_3Si(CH_2)_3SiR_3$; $R_2Si[(CH_2)_3SiR_3]_2$; $(CH_3)_2Si[(CH_2)_3SiR_3]_2$;
$C_6H_5(CH_3)Si[(CH_2)_3Si(CH_3)_3]_2$; $C_6H_5(CH_3)Si[(CH_2)_3Si(C_6H_5)_3]_2$, and
$(C_6H_5)_2Si[(CH_2)_3Si(CH_3)_3]_2$. These compounds were obtained by adding
$HSiCl_3$ to mono- and diallyl derivatives of silicon using benzoyl

Card 1/3

Determination of the Structure of a Series of   S/079/60/030/008/004/008
Organosilicon Compounds Obtained by Adding   B004/B064
Trichlorosilane to Mono- and Diallyl Derivatives
of Silicon by Infrared Spectroscopy

peroxide, platinum on coal or platinum hydrochloric acid as catalyst.
It was the aim of this paper to find whether the addition takes place
according to the Markovnikov rule (structure B) or against this rule
(structure A):

$$R_3SiCH_2CH=CH_2 + HSiCl_3 \nearrow R_3Si(CH_2)_3SiCl_3 \quad (A)$$
$$\searrow R_3SiCH_2CHSiCl_3 \quad (B) \qquad and$$
$$\qquad\qquad\qquad CH_3$$

$$R_2Si \begin{array}{c} CH_2-CH=CH_2 \\ CH_2-CH=CH_2 \end{array} + 2HSiCl_3 \nearrow Cl_3Si(CH_2)_3\overset{R}{\underset{R}{Si}}(CH_2)_3SiCl_3 \quad (A)$$

$$\searrow Cl_3Si\underset{CH_3}{CH}CH_2\overset{R}{\underset{R}{Si}}CH_2\underset{CH_3}{CH}SiCl_3 \quad (B)$$

The infrared spectra were recorded with a ИКC-12 (IKS-12) spectrometer
in the range of 700 - 1700 cm^{-1} and 2800 - 3000 cm^{-1}. Table 2 shows the

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Determination of the Structure of a Series of   S/079/60/030/008/004/008
Organosilicon Compounds Obtained by Adding   B004/B064
Trichlorosilane to Mono- and Diallyl Derivatives
of Silicon by Infrared Spectroscopy

intensities of the 2952 cm^{-1} peak and the CH_3 group. The number of CH_3 groups calculated herefrom corresponds to structure A. The same holds for the intensity of the 2912 cm^{-1} peak of the CH_2 group (Table 3).

Characteristic bands are found at about 900 and between 1135-1140 cm^{-1} in the range of 700-1700 cm^{-1} (Fig.), which are ascribed to group $SiCH_2CH_2CH_2Si$ and also confirm structure A. Table 4 shows, with reference to published data, the characteristic frequencies of the radicals bound to the silicon atom, and the spectra in which the authors found these frequencies. Graphs are given of 21 spectra. There are 22 figures, 4 tables, and 4 references: 1·Soviet, 2 US, and 1 British.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
               (Institute of Petroleum-chemical Synthesis of the
               Academy of Sciences USSR)

SUBMITTED: August 31, 1959

Card 3/3

$5.3700(B)$

5(3)

67954

SOV/20-130-1-29/69

AUTHORS: Topchiyev, A. V., Academician, Nametkin, N. S., Durgar'yan, S. G.

TITLE: Addition of Trichlorosilane to Dialkyl-(phenyl, chlorine)-diallylsilanes in the Presence of $H_2PtCl_6.6H_2O$

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 1, pp 105-108 (USSR)

ABSTRACT: Under the conditions chosen by the authors for the reaction
             mentioned in the title, an addition of trichlorosilane took place
             to one as well as to 2 double bonds of the silanes mentioned in
             the title. The total yield in addition products varied between 55
             and 75% (Table 1). The authors' investigation showed that the
             activity of the double bond with respect to the addition
             reactions depends on the quality of atoms and groups bound to the
             silicon atom. The activity of the double bond in the dialkyl-
             (phenyl, chlorine)-diallylsilanes increases with an increase in
             the alkyl radicals as well as in their substitution by a phenyl
             radical or a chlorine atom. Thus, for instance, the trichloro-
             silane is added to dimethyl-, diethyl-, dipropyl- and dibutyl-
             diallylsilane with a total yield in addition products of 56-63%.
             In its addition to diphenyl- and dichloroallylsilane, the yield
             is 70 and 75%, respectively (Table 1). The authors produced a
             series of silicon hydrocarbons by interaction of chloroderivatives

Card 1/2

Addition of Trichlorosilane to Dialkyl-
(phenyl, chlorine)-diallylsilanes in the Presence of $H_2PtCl_6 \cdot 6H_2O$

67954
SOV/20-130-1-29/69

developed by addition of trichlorosilane to 2 double bonds of
lithium alkyls. Infrared spectra (recorded by Yu. P. Yegorov)
of the latter showed that the addition of trichlorosilane
proceeds here contrary to Markovnikov's rule (see Scheme). The
interaction between trichlorosilane and vinyltrichlorosilane,
styrene or octene-1 in the presence of $NiCl_2 \cdot 5C_5H_5N$ may also
lead to an addition both according to Markovnikov's rule and
contrary to this rule (Ref 16). There are 1 table and
17 references, 5 of which are Soviet.

SUBMITTED: August 10, 1959

Card 2/2

To be submitted for the International Symposium on Macromolecular Chemistry,
Montreal, Canada, 27 Jul -1 Aug 1961.

USSR

BRESLER, S. M., Institute of High Molecular
Chemistry, Academy of Sciences USSR, Leningrad,
jointly with KNIBAUM, V. R., and KAZBEK, M.,
Duke University, Durham, N.C. - "Elasticity
of cube lattice chain networks" (Group 2)

KOBANOV, Boris A., and KOUCKY, A. A., Moscow
Institute of Fine Chemical Technology imeni M. V.
Lomonosov - "Interaction of polyethylene with
sulphur" (Groups 4-5)

KARGIN, Valentin A., Head, Laboratory of Colloidal
Chemistry, Scientific Research Physico-Chemical
Institute imeni L. Ya. Karpov, Moscow - "The
formation of big crystal structures in polymers
and their properties" (Group 2. Invited lecture)

KARGIN, V. A., TOPCHIEV, A. V., and BAKALO,
A. A., Institute of Petroleum, Academy of Sciences
USSR, Moscow - "Polymerization of some epoxy
compounds" (Group 3-B)

MEDVEDEV, Sergei S., SPIRIN, YU. A., ABKIN-KACZEVICH,
A. A., BULANOV, D. K., and GANTMAKHER, A. R.,
Scientific Research Physico-Chemical Institute
imeni L. Ya. Karpov, Moscow - "Polymerization
catalyzed by lithium and lithium alkyl" (in German)
(Group 3-B)

NAUCHIN, M. S., TOPCHIEV, A. V., and POLAK, L. S.,
Institute of Petrochemical Synthesis, Academy of
Sciences USSR, Moscow - "On the catalytic polymerization
and radiochemistry of alkylsines" (Group 3-A)

FLOROTSKIY, K. S., All-Union Scientific Research
Institute of Synthetic Rubber imeni S. V. Lebedev,
Leningrad - "Temperature effect on polymer
structure in diene polymerization by alkali metals"
(Group 3-B)

PODDUBNYY, I. Ya., and ERENBURG, Ye. G., All-Union
Scientific Research Institute of Synthetic Rubber,
Leningrad - "Study of branching in regular
isoprene polymers" (Group 1)

PODDUBNYY, I. Ya. MOSKVIESKY, M. F.RASHNIKOV,
M. A., and FEDOROV, A. P. All-Union Scientific
Research Institute of Synthetic Rubber imeni
S. V. Lebedev, Leningrad - "Nature of
molecular-weight distribution and properties
of styrene-butadiene rubbers depending on
polymerization conditions" (Group 3-A)

PRAVEDNIKOV, A. N., TYLKOV, Ye. N., TIM,
Sha-kheng, and MEDVEDEV, S. S., Scientific Research
Physico-Chemical Institute imeni L. Ya. Karpov,
Moscow - "Investigation of the mechanism of
radiolysis of polymers containing quaternary atoms
of carbon" (Group 4-5) jointly V. M.,
ROGOVIN, Victor M., Institute of High Molecular
Compounds of the Academy of Sciences USSR,
Leningrad - "Stereo-regularity and optical
anisotropy of macromolecules" (Group not specified)

ROGOVIN, Zhenia Vu., and SSHEIEVICH, Z. I., Academy
of Sciences USSR, Tashkent, Uzbekistan - "The
investigation of the cotton cellulose polydispersity
according to the molecular weight" (Group not
specified)

ROGOVIN, M. S., Institute of Chemical Physics
of the Academy of Sciences USSR, Moscow - "On
the kinetics of formaldehyde polymerization and
polyformaldehyde degradation" (Group 3-B)

S/661/61/000/006/034/031
D205/D302

AUTHORS: Durgar'yan, S. G., Topchiyev, A. V., Nametkin, N. S.
               and Dyankov, S. S.

TITLE: Polymerization of dialkyl diallyl silanes on complex
               catalysts triethylaluminum-titanium tetrachloride

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganiches-
               kikh soyedineniy; trudy konferentsii. no. 6: Doklady,
               diskussii, resheniye. II.Vses. konfer. po khimii i
               prakt. prim. kreneorg. soyed., Len., 1958. Leningrad,
               Izd-vo AN SSSR, 1961, 162

TEXT: Polymerization of alkenyl silanes requires high pressure or
a temperature not lower than 130 - 150°C. It is known that Ziegler
catalysts permit the polymerization of olefines at 100°C and with-
out pressure. The synthesis of allylic derivatives of silicon is
also rather too complicated and difficult for industrial applica-
tion. Thus the copolymerization of ethylene or propylene with di-
allyl-substitutes of silanes is a problem which awaits a solution.

Card 1/2

Polymerization of dialkyl ...

S/661/61/000/006/034/081
D205/D302

This route will require lower amounts of diallylic derivatives and will, apparently, change the properties of the polymers.

ASSOCIATION: Institut neftekhnimicheskogo sinteza Akademii nauk SSSR, Moskva (Institute of Petroleum Chemistry Synthesis, Academy of Sciences, USSR, Moscow)

Card 2/2

S/661/61/000/006/057/081
D267/D302

AUTHORS: Gundyrev, A. A., Topchiyev, A. V., Panchenkov, G. M.,
             Nametkin, N. S. and Ku Ch'ang-ling

TITLE: Dependence of the viscosity and density of some classes
             of organosilicon compounds on temperature, and the relat-
             ion between the interaction energies of molecules of
             these compounds and their structure

SOURCE: Khimiya i prakticheskoye primeneniye kremneorganicheskikh
             soyedineniy; trudy konferentsii, no. 6: Doklady, diskus-
             sii, resheniye. II Vses. konfer. po khimii i prakt. prim.
             kremneorg. soyed., Len. 1958. Leningrad, Izd-vo, AN SSSR,
             1961, 239-240

TEXT: A discussion relating to a minor detail of the above paper
(this publication, no. 3, p. 80), in which Ya. I. Vabel' (Moscow)
took part. One of the authors stated that viscosity of mixtures of
polysiloxane liquids had not been calculated, and that viscosities
at temperatures below 0°C had not been measured.

Card 1/2

Dependence of the viscosity ...

S/661/61/000/006/057/061
D267/D302

ASSOCIATION: Institut neftekhinicheskogo sinteza Akademii nauk
SSSR, Moskva (Institute of Petrochemical Synthesis,
Academy of Sciences, USSR, Moscow)

Card 2/2

15.8116   2209

S/190/61/003/006/006/019
B110/B216

AUTHORS: Lyashenko, I. N., Nametkin, N. S., Polak, N. S.,
               Topchiyev, A. V., Fel'dman, A. S., Chernysheva, T. I.

TITLE: Catalytic and radiation polymerization and copolymerization
               of allylhydridesilane derivatives

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 6, 1961, 833-840

TEXT: Unsaturated polymers with silicon-carbon links of the type
$RCH = CHSiR_2H$ have lately become of great importance. Using platinized

carbon, the authors obtained the polymers: $-SiCH_2CH_2SiCH_2CH_2Si-$ and

$-SiCH_2CH_2CH_2SiCH_2CH_2CH_2Si-$. In the present study, diethylallylsilane (I),
ethylphenylallylsilane (II), ethyldiallylsilane (III) and triallylsilane
(IV) were polymerized at atmospheric pressure catalytically and by the
radiation method and copolymerized with acrylonitrile and styrene.
Benzoyl peroxide was used as initiator, platinized carbon as catalyst and
β and γ rays for irradiation. On heating for 30 min, (IV) polymerized to
a white, powdery substance; (III) on heating for 10 hr at 150-200°C with

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Catalytic and radiation polymerization...   B110/B216

the initiator yielded a white, brittle substance; (II) with the initiator
yielded a highly viscous liquid and (I) did not polymerize. The
polymerizates of (III) and (IV) were insoluble in most organic solvents.
The substituents of the alkenylsilane derivatives affect initiated (A) and
radiation (B) polymerization in the same way. According to the type of
radical linked to the silicon atom, the polymerizates are oily or solid
substances. The tendency to polymerize increases with the number of alkyl
groups. The degree of conversion increases with the introduction of
phenyl groups. Alkyl substituted monoallylsilanes are difficult to
polymerize by (A) or (B). Polymerization probably occurs by cleavage of
the double bond, since the infrared spectrum showed the absence of double
bonds. A clearly defined second component (Fig. 2a) (III) was found by
electron paramagnetic resonance. Introduction of a phenyl group in (II)
reduced the amount of this second component (Fig. 2б), and introduction of
two phenyl groups in the case of diphenylallylsilane led to the dis-
appearance of this component (Fig. 2B). Fig. 2 shows the epr spectrum of
dimethylallylsilane, having no hydrogen at the silicon atom. The presence
of free radicals in monomers irradiated at $-196^{\circ}C$ and the similarity of
their infrared spectra with those of initiated monomers indicate radical

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Catalytic and radiation polymerization...

polymerization. Copolymerization of (I), (II), and (III) with acryloni-
trile was carried out at various component ratios and γ-doses of $10 \cdot 10^6$ r.
The copolymerizates obtained (Table 3) are not fusible below 300°C and
char at 300°C. The weak or absent double bond band of the acrylonitrile
copolymerizates of (III) and (IV), respectively, show that the allyl
groups must have reacted in copolymerization to a certain extent in the
case of (III) and quantitatively in that of (IV). Doses of $75 \cdot 10^6$ r at a
rate of $0.6 \cdot 10^6$ r/hr were applied for radiation copolymerization of di-
phenylallylsilane, (II), (II) and styrene in varying ratios. Co-
polymerizate composition does not depend on the initial mixture, the
organosilicon component varies between 11 and 17 %. Copolymerizates
containing more than 10 % organosilicon components are viscous and
elastic, at contents below 10 % they are solid. The copolymerizate of
styrene with (IV) in the ratio 1:1 is a hard substance.m.p. 245°C. To
48 g (2 g-at.) of magnesium in dry ether was added a mixture of 121 g
(1 mole) of ethyl bromide and 64.5 g (0.5 mole) of ethyldichlorosilane.
Yield: 120 g (85 %) of diallylethylsilane b.p. 142-149°C at 756 mm Hg.
The other silanes were prepared accordingly. For polymerization, the
silane derivatives (1 mole), together with benzoyl peroxide (0.1 mole)

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Catalytic and radiation polymerization...

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were heated to boiling for 10 hr at atmospheric pressure. Polymer molecular weights were determined cryoscopically in benzene (Table 2). The silane derivatives were also heated for 10 hr with 15 % platinized carbon (1 g per mole silane). After 2 hr, the mixture was heated to 250°C. Triallylsilane was converted to a hard brittle powder within 30 min. Radiation polymerization was carried out in molybdenum glass tubes (10 and 20 ml) using a Co^{60} source of capacity 20,000 g-eq. Ra and electron accelerator of 800 kev. The γ-dose rate was $0.63 \cdot 10^6$ r/hr, irradiations being performed at ~100°C for homopolymerization and 20°C for copolymerization. The monomers and polymers were analyzed in a ИКС-14 (IKS-14) spectrometer using NaCl prisms for the 2000-70 cm^{-1} range and LiF prisms for the 2000-2300 cm^{-1} range. Liquid monomers were examined in the undiluted state at a thickness of 0.014 mm. The epr spectra were taken in molybdenum glass tubes of 4 mm thickness at 196°C and -78°C at a dose rate of $15 \cdot 10^6$ r/hr. The authors thank M. P. Teterina for carrying out the spectroscopic analysis. There are 3 figures, 4 tables, and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc. The three references to English-language publications read as follows: Ref. 2: D. G. White, E. G. Rochow, J. Amer. Chem. Soc., 76, 3897, 1954. Ref. 4: Y. M. Curry,

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Catalytic and radiation polymerization...

J. Amer. Chem. Soc., 78, 1686, 1956. Ref. 5: Y. M. Curry, J. Amer. Chem. Soc., 80, 1219, 1958.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petrochemical Synthesis, AS USSR)

SUBMITTED: July 22, 1960

Table 1: Properties of allylsilane derivatives. 1) Monomers; 2) b.p., °C; 3) found; 4) calculated; 5) yield, %.

(1) Мономеры	(2) Т. кип.,°C (лм)	n_D^{20}	d_4^{20}	(3) найдено MRD	(4) вычислено	(5) Выход, %
(C₄H₉)₃C₃H₅SiH	126—127	1,4302	0,7536	43,96	43,99	56,4
C₆H₅C₆H₅C₃H₅SiH	76—78(3)	1,5124	0,8935	59,21	59,24	50,3
(C₆H₅)₂C₃H₅SiH	132—135(2)	1,5762	0,9954	74,49	74,52	62,0
C₃H₅(C₃H₅)₃SiH	142—149	1,4503	0,7784	48,53	48,36	85,0
(C₃H₅)₃SiH	42—44(2)	1,4682	0,80142	52,96	52,82	65,6

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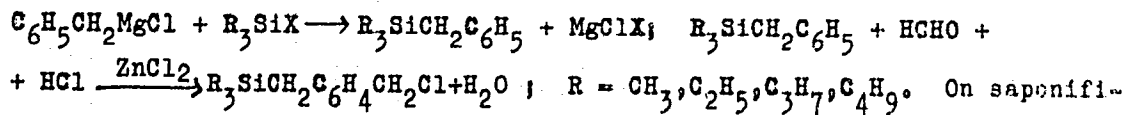
20950

$S/079/61/031/004/004/006$
$B118/B208$

$S \cdot 3760$ $2209, 1273, 1274$

AUTHORS: Nametkin, N.S., Topchiyev, A.V., Ku Ch'ang-li, and
Pritula, N.A.

TITLE: Chloromethylation of trialkyl-benzyl silanes and some
conversions of chloro-methyl-benzyl trialkyl silanes

PERIODICAL: Zhurnal obshchey khimii, v. 31, no. 4, 1961, 1303 – 1309

TEXT: In addition of the paper by K.A. Andrianov, A.A. Zhdanov, and V.A.
Odinets (Ref. 2: DAN SSSR, 130, 75 (1960)) the authors studied the chlo-
romethylation of some trialkyl-benzyl silanes obtained by reaction of ben-
zyl magnesium chlorides with trialkyl halogen silanes:

$C_6H_5CH_2MgCl + R_3SiX \longrightarrow R_3SiCH_2C_6H_5 + MgClX;$ $R_3SiCH_2C_6H_5 + HCHO +$

$+ HCl \xrightarrow{ZnCl_2} R_3SiCH_2C_6H_4CH_2Cl+H_2O$; $R = CH_3, C_2H_5, C_3H_7, C_4H_9.$ On saponifi-

cation of chloro-methyl derivatives of trialkyl-benzyl silanes, oxygen-
-containing organosilicon compounds were formed, and a number of silicon
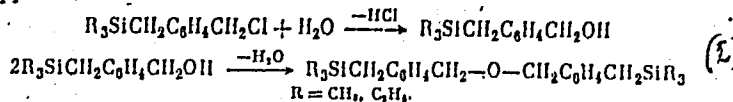
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Chloromethylation of trialkyl-benzyl ...

hydrocarbons resulted by means of organomagnesium compounds of the chloro-
-metyl derivatives. Chloromethylation was performed in water with 35%
formalin at 70-85°C, or in carbon tetrachloride with paraformaldehyde at
50-55°C. $ZnCl_2$ was used as a catalyst. Trimethyl- and triethyl-benzyl
silanes gave chloro-methyl-benzyl-trimethyl silane (54% yield), and chloro-
-methyl-benzyl-triethyl silane (19% yield), respectively, on chloromethyla-
tion after 16 hr. In carbon tetrachloride the yield was about 30% in both
cases. On chloromethylation of tripropyl-benzyl silane in CCl_4 the yield
of chloro-methyl-benzyl-tripropyl silane was 8.5%. Chloromethylation of
tributyl-benzyl silane was not possible. If, however, chloromethylation
was carried out in glacial acetic acid with paraformaldehyde at 80°C, the
yield was 11%. Increasing alkyl radical in benzyl-trialkyl silanes thus
renders their chloromethylation difficult (Table 1). Saponification of
chloro-methyl derivatives of trimethyl- and triethyl-benzyl silanes by
heating in water in the presence of $CaCO_3$ gives alcohols which are conver-
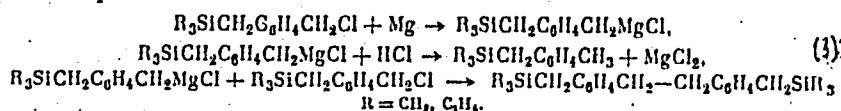ted to ether when heated:

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$$R_3SiCH_2C_6H_4CH_2Cl + H_2O \xrightarrow{-HCl} R_3SiCH_2C_6H_4CH_2OH$$

$$2R_3SiCH_2C_6H_4CH_2OH \xrightarrow{-H_2O} R_3SiCH_2C_6H_4CH_2-O-CH_2C_6H_4CH_2SiR_3 \quad (2)$$
$$R = CH_3,\ C_2H_5.$$

By reducing trimethyl- and triethyl-benzyl silanes via their organomagne-
sium compounds, condensation products of chloro-methyl-benzyl-trialkyl
silanes were separated in addition to the corresponding trialkyl-methyl-
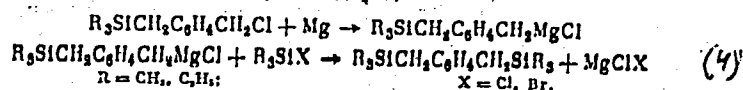-benzyl silanes:

$$R_3SiCH_2C_6H_4CH_2Cl + Mg \rightarrow R_3SiCH_2C_6H_4CH_2MgCl,$$
$$R_3SiCH_2C_6H_4CH_2MgCl + HCl \rightarrow R_3SiCH_2C_6H_4CH_3 + MgCl_2,$$
$$R_3SiCH_2C_6H_4CH_2MgCl + R_3SiCH_2C_6H_4CH_2Cl \rightarrow R_3SiCH_2C_6H_4CH_2-CH_2C_6H_4CH_2SiR_3 \quad (3)$$
$$R = CH_3,\ C_2H_5.$$

By reacting the organomagnesium compounds of trimethyl- and triethyl-
-chloro-methyl-benzyl silanes with trialkyl halogen silanes, the corre-
sponding silicon hydrocarbons were obtained:

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Chloromethylation of trialkyl-benzyl ...

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$$R_3SiCH_2C_6H_4CH_2Cl + Mg \rightarrow R_3SiCH_2C_6H_4CH_2MgCl$$
$$R_3SiCH_2C_6H_4CH_2MgCl + R_3SiX \rightarrow R_3SiCH_2C_6H_4CH_2SiR_3 + MgClX \quad (4)$$
$$R = CH_3,\ C_2H_5; \qquad X = Cl,\ Br.$$

In the latter case, also condensation products of chloro-methyl-benzyl-
-trialkyl silanes were separated (Table 2). In order to determine the ra-
tio of isomers in the chloro-methyl derivatives of trialkyl-benzyl silanes,
the oxidation method by I.N. Nazarov and A.V. Semenovskiy (Ref. 4: Izv.
AN SSSR, OKhN, 1957, 100) was applied. It was found (by oxidation of
chloro-methyl-benzyl-trialkyl silanes obtained in the CCl_4 medium) that

70 % paraisomer was formed in the chloromethylation of trimethyl-benzyl
silane, 75 % paraisomer in that of triethyl-benzyl silane, and 98 % para-
isomer in that of tripropyl-benzyl silane. On chloromethylation in water
the yields of paraisomer were more than 90% in the case of trimethyl- and
triethyl-benzyl silanes. The spectrum analysis performed by Yu.P.
Yegorov confirmed the above results. There are 2 tables and 4 Soviet-bloc
references.

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Chloromethylation of trialkyl-benzyl ...

S/079/61/031/004/004/006
B118/B208

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR
                (Institute of Petrochemical Synthesis of the Academy of
                Sciences USSR)

SUBMITTED: May 16, 1960

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S/079/61/031/004/004/006
B118/B208

Chloromethylation of trialkyl-benzyl ...

ТАБЛИЦА 1

Свойства хлорметилбензилтриалкилсиланов

(1) Соединение	Получено в среде (2)	Температура кипения (давление в мм) (3)	d^{20}	n_D^{20}	MR найдено (4)	MR вычислено (5)
$(CH_3)_3SiCH_2C_6H_4CH_2Cl$	H_2O	96—98° (5)	0.9980	1.5220	65.02	63.99
	CCl_4	95—96 (4)	1.0170	1.5268	64.31	
$(C_2H_5)_3SiCH_2C_6H_4CH_2Cl$	H_2O	139—141 (3)	0.9910	1.5250	78.80	77.88
	CCl_4	138—139 (3)	0.9951	1.5258	78.59	
$(C_3H_7)_3SiCH_2C_6H_4CH_2Cl$	CCl_4	155—157 (3)	0.9666	1.5158	92.74	91.77
$(C_4H_9)_3SiCH_2C_6H_4CH_2Cl$	CH_3COOH	191—194 (4)	0.9570	1.5024	104.62	105.66

Legend to Table 1: (1) Compound; (2) medium applied; (3) boiling point (pressure in mm Hg); (4) found; (5) calculated.

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B118/B208

Chloromethylation of trialkyl-benzyl ...

(1) Соединение	Температура кипения (давление в мм) (2)	d_4^{20}	n_D^{20}	M найдено (3)	M вычислено (4)	MR_D найдено (3)	MR_D вычислено (4)	Найдено (3) C	H	Si
(CH₃)₃SiCH₂C₆H₄CH₃	80.5—81° (8)	0.8685	1.4960	—	—	59.97	59.15	74.38, 74.36	10.27, 10.17	15.11.
(CH₃)₃SiCH₂C₆H₄CH₂OH	114—116 (3)	0.9625	1.5180	—	—	61.17	60.70	—	—	—
[(CH₃)₃SiCH₂C₆H₄CH₂]₂O	T. пл. 65°	—	—	365, 368	370.6	—	—	71.43, 71.44	9.34, 9.15	15.16.
(CH₃)₃SiCH₂C₆H₄CH₂Si(CH₃)₃	T. пл. 58—58.5°	—	—	245, 248	250.5	—	—	67.27, 67.32	10.46, 10.40	21.75.
(CH₃)₃SiCH₂C₆H₄CH₂CH₂C₆H₄CH₂Si(CH₃)₃	T. пл. 68°	—	—	347, 350	354.6	—	—	74.68, 74.69	9.67, 9.88	14.89.
(C₂H₅)₃SiCH₂C₆H₄CH₃	102 (2)	0.8968	1.5055	—	—	73.51	72.68	76.52, 76.52	10.87, 10.88	12.56.
[(C₂H₅)₃SiCH₂C₆H₄CH₂]₂O	235—237 (2)	0.9633	1.5305	447, 445	454.7	145.04	145.00	74.09, 73.98	10.21, 10.35	11.54.
C₆H₅)₃SiCH₂C₆H₄CH₂Si(C₂H₅)₃	170—172 (2)	0.8960	1.5050	327, 329	334.6	110.77	109.73	72.02, 72.03	11.48, 11.44	16.43.
C₆H₅)₃SiCH₂C₆H₄C₆H₄CH₂C₆H₄CH₂Si(C₂H₅)₃	233—236 (2)	0.5300	0.9392	430, 432	438.7	144.29	143.23	76.92, 76.94	10.70, 10.58	12.74.

Вычислено (4)

	Si	C	H
	15.73	74.10	10.17
	—	—	—
	15.14	71.29	9.24
	22.40	67.14	10.46
	15.83	74.51	9.66
	12.73	76.30	10.97
	12.34	73.95	10.20
	16.77	71.78	11.45
	12.79	76.64	10.57
	15.04	—	—
	15.00	—	—
	22.04	—	—
	14.95	—	—
	12.56	—	—
	11.78	—	—
	16.22	—	—
	12.36	—	—

Legend to Table 2: (1) Compound; (2) boiling point (pressure in mm Hg); (3) found; (4) calculated.

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28672
S/020/61/140/002/017/023
B103/B101

5.3700

AUTHORS: Nametkin, N. S., Topchiyev, A. V., Academician, Chernysheva, T. I., and Lyashenko, I. N.

TITLE: Addition of hydride silanes to allyl amine

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 2, 1961, 384-386

TEXT: The authors studied the addition of the following hydride silanes to allyl amine: triethyl silane, tripropyl silane, tributyl silane, dimethyl-phenyl silane, diethyl-phenyl silane, methyl-phenyl silane, methyl-diphenyl silane, ethyl-diphenyl silane, triphenyl silane, and triethoxy silane. Addition was carried out in the presence of chloroplatinic acid as follows:

$$R_3SiH + CH_2 = CHCH_2NH_2 \rightarrow R_3SiCH_2CH_2CH_2-NH_2.$$

Table 1 shows that hydride silanes with alkyl radicals on the Si atoms are added with a higher yield of allyl amine than silanes with aromatic substituents. The infrared spectra of nos. 1 and 3 showed that the resulting products are primary amines. The same was confirmed for no. 3 by potentiometric titration. This indicates that the silanes are added to the double bond of the allyl

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Addition of hydride silanes ...

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B103/B101

group, the amino group remaining unchanged. There are 1 figure, 1 table, and 3 references: 1 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: J. L. Speier, US. Pat., 2, 762, 823, Chem. Abstr., 51, 7416 (1957); C. Eaborn, Organosilicon compounds, London, 1960, p. 214.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petrochemical Synthesis of the Academy of Sciences USSR)

SUBMITTED: May 20, 1961

Table 1. Legend:
a) consecutive number;
b) compound;
c) vitrification temperature;
d) melting point;
(1) boiling point;
(2) found; (3) calculated; (4) yield.
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№ Соединение	Т. кип., °C/мм 1	d_4^{20}	n_D^{20}	MR_D найд. 2	MR_D выч. 3	Выход % 4
$(C_2H_5)_3SiCH_2CH_2CH_2NH_2$	81—83/4	0,8321	1,4523	56,16	56,54	62,6
$(C_3H_7)_3SiCH_2CH_2CH_2NH_2$	106—108/4	0,8288	1,4560	70,64	70,70	54,2
$(C_4H_9)_3SiCH_2CH_2CH_2NH_2$	170—174/6	0,8291	1,4591	84,72	84,08	80,8
$(CH_3)_2C_6H_5SiCH_2CH_2CH_2NH_2$	97—99/2	0,9362	1,5162	62,40	62,85	27,0
$(C_6H_5)_2C_6H_5SiCH_2CH_2CH_2NH_2$	120—122/2	0,9356	1,5189	71,82	71,85	50,1
$CH_3(C_6H_5)_2SiCH_2CH_2CH_2NH_2$	206—207/7	1,0159	1,5721	82,60	82,65	31,9
$C_6H_5(C_6H_5)_2SiCH_2CH_2CH_2NH_2$	Т. стекл. 12°					32,7
$(C_6H_5)_3SiCH_2CH_2CH_2NH_2$	Т. пл. 99—101°					30,4
$(C_2H_5O)_3SiCH_2CH_2CH_2NH_2$	103—104/2	0,9474	1,4225	59,43	59,18	10,0

L 01305-67   EWT(m)/EWP(j)/T   IJP(c)   RM

ACC NR: AP5027229   (A)   SOURCE CODE: UR/0020/65/164/006/1319/1322

AUTHOR: Nametkin, N. S. (Corresponding member AN SSSR); Pritula, N. A.; Chernysheva,
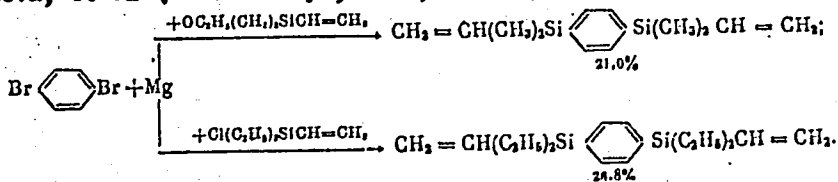T. I.; Znamenskaya, E. N.

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B

ORG: Institute of Petrochemical Synthesis im. A. V. Topchiyev, AN SSSR (Institut
neftekhimicheskogo sinteza AN SSSR)

TITLE: Synthesis of 1,4-bis(diorganovinylsilyl)benzenes

TOPIC TAGS: organosilicon compound, benzene, organic synthetic process

ABSTRACT: The newest achievements of the authors in the study of organosilicon
compounds with a phenylene bridge between the silicon atoms are reported. A new group
of p-disilyl substituted benzenes, the symmetrical 1,4-bis(diorganovinylsilyl)-
benzenes, were prepared analogously to the method given by N. S. Nametkin, T. I.
Chernysheva, et al. (Neftekhimiya, 1964, vol. 4, no. 4, p.650) by the scheme:

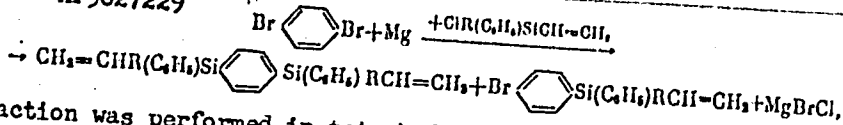$$+OC_6H_5(CH_3)_2SiCH=CH_2 \rightarrow CH_2=CH(CH_3)_2Si\langle\rangle Si(CH_3)_2 CH=CH_2; \quad 21.0\%$$

$$Br\langle\rangle Br + Mg$$

$$+Cl(C_2H_5)_2SiCH=CH_2 \rightarrow CH_2=CH(C_2H_5)_2Si\langle\rangle Si(C_2H_5)_2CH=CH_2. \quad 24.8\%$$

UDC: 546.287

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L 01305-67

ACC NR: AP5027229

$$Br\langle \rangle Br + Mg \xrightarrow{+ClR(C_6H_5)SiCH=CH_2}$$

$$\rightarrow CH_2=CHR(C_6H_5)Si\langle \rangle Si(C_6H_5)RCH=CH_2 + Br\langle \rangle Si(C_6H_5)RCH=CH_2 + MgBrCl,$$

The reaction was performed in tetrahydrofurane (THF) with the molar ratio of components 1,4-B₂C₆H₄:Mg:XRR'SiCH:CH₂ equal 1:~2.3:2. The physicochemical constants of the mono- and n-disilyl substituted benzenes are given in Table 1. The products obtained reacted with substituted silicon hydrides to give high-molecular-weight polymers. Orig. art. has: 1 fig. and 1 table.

Table 1. Physicochemical constants of mono- and n-disilyl substituted benzenes

Compound	boiling pt C°/mm	d^{20}_4	n^{20}_D	MRD detd	MRD cal	mol. wt. detd	mol. wt. cal
CH₂=CH(CH₃)₂Si⟨⟩Si(CH₃)₂CH=CH₂	95/1	0,0123	1,5120	81,08	81,85	243 244	246,4
CH₂=CH(C₆H₅)₂Si⟨⟩Si(C₆H₅)₂CH=CH₂	136-137/1	0,0208	1,5218	99,54	99,89	301 300	303,3
[CH₂=CH(CH₃)(C₆H₅)Si]₂⟨⟩	191-192/8·10⁻³ .33	1,0246	1,5802	121,01	121,49	367 371	370,6
CH₂=CH(C₆H₅)₂Si⟨⟩Si(C₆H₅)₂CH=CH₂	157-158	—	—	—	—	504 507	494,7
Br⟨⟩Si(CH₃)(C₆H₅)₂CH=CH₂	143-144/1	1,2337	1,5017	81,09	81,61	299 305	303,3
Br⟨⟩Si(C₆H₅)₂CH=CH₂	203-208/1 .60-61	—	—	—	—	360 361	365,3

detd.-determined

cal.-calculated

Card 2/2   SUB CODE: 07/ SUBM DATE: 07May65/ ORIG REF: 007/ OTH REF: 008

NAMESTNIKOV, V. S., Cand Phys-Math Sci ₐ--(diss)"~~Some~~ Certain Problems of
Unstabilized Creep Under Conditions of ∧ Complex ~~Intensive~~ Stress State."

Mos, 1957. 6 pp (Mos State Univ im M. V. Lomonosov), 100 copies

(KL, 51-57, 91)

- 3 -

AUTHOR: Namestnikov, V. S. (Moscow).   24-4-23/34

TITLE: On the creep during constant loads under conditions of a
               complex stress state (O polzuchesti pri postoyannykh
               nagruzkakh v usloviyakh slozhnogo napryazhennogo sostoya-
               niya).

PERIODICAL: "Izv. Ak. Nauk, Otd. Tekh. Nauk" (Bulletin of the Ac. Sc.,
               Technical Sciences Section),1957, No.4, pp.141-145 (USSR).

ABSTRACT: In hitherto published experimental work relating to creep
               in the case of combined stress states the behaviour of
               the material is considered solely for the stage of steady
               state creep, i.e. for the case that the creep speed is
               constant. This applies to American and British work (1 –
               9) as well as to the work of Kats (Vestnik Mashinostroen-
               iya, 1953, No.12). In the view of this author it is of
               equal importance to study the initial speed, the so-called
               non-steady state creep at which the creep speed decreases.
               The author investigated experimentally the behaviour of
               the metal at high temperatures for a combined stress state
               consisting of simultaneous torsion and tension and veri-
               fied certain theoretical hypotheses, particularly the
               hypothesis of hardening and the hypothesis of the propor-
               tionality of the stress and strain deviators. In contrast
               to other authors, the author of this paper investigated

Card 1/3   the non-steady state creep stage. The studies were made
               at constant loads and since the creep deformation was

On the creep during constant loads under conditions of a complex stress state (Cont.).   24-4-23/34

could not be of the type $f(p_i, p_i, \sigma_i) = 0$ since there must be a more complicated dependence on the stress. The stress deviator is approximately proportional to the creep deformation deviator. The author of this paper proposes the use of the equation:

$$\dot{p}_i \, p_i^\alpha = \chi \exp \left(\frac{\sigma_i}{A} - \frac{|\tau_{max}|}{A_0} \right)$$

where α, χ, A and A_0 are material constants; this equation shows good agreement with experimental data. There are 5 figures, 10 references, one of which is Russian.

ASSOCIATION: Theory of Plasticity Chair, Moscow State University. (Kafedra Teorii Plastichnosti MGU).

SUBMITTED: December 26, 1956.

AVAILABLE:

Card 3/3

$N A M E S T N I K O V, V. S.$

AUTHOR: Namestnikov, V. S. (Moscow)   24-10-14/26

TITLE: On creep during alternating load under combined stress
state conditions. (O polzuchesti pri peremennykh nagruzkakh
v usloviyakh slozhnogo napryazhennogo sostoyaniya).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh
Nauk, 1957, No.10, pp.83-85 (USSR)

ABSTRACT: In a previous paper (Ref.4), the author gave results of
creep experiments at constant loads under combined stress
state conditions. In this paper results are given of
creep tests with alternating loads for combined stress
conditions. The experiments were carried out on thin
walled cylindrical specimens in the case of simultaneous
action of torsion and tensile stresses. The test machine
and the shape and dimensions of the specimens as well as
the experimental technique were the same as those used in
the earlier described work. The experiments were carried
out on rods of austenitic steel ЭИ 257; before making the
specimens the rods were subjected to annealing for one
hour at 1150°C, quenching in water and ageing for ten hours
at 760°C followed by cooling in the furnace. The tests
lasted about 100 hours, i.e. the non-steady state creep
Card 1/3 was studied. The tests were carried out in series, for

Namestnikov, U.S.

SOV/24-58-4-33/59

AUTHOR: Ivlev, D.D.

TITLE: Conference on Sustained Static Strength of Turbine Components Working at High Temperatures (Soveshchaniye po dlitel'noy staticheskoy prochnosti detaley turbomashin, rabotayushchikh pri vysokoy temperature)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 149 - 150 (USSR)

ABSTRACT: The Commission on the Strength of Gas Turbines from the Institut mekhaniki AN SSSR (Institute of Mechanics of the Ac.Sc.USSR) (Chairman - Yu.N. Rabotnov) and the Strength Section of the Leningrad Technical Committee on Turbine Construction (Chairman - A.K. Naumov) held a conference during November 20-22, 1957 on the sustained static strength of turbine components working at high temperature. The conference was opened by an introductory speech by the chairman of the Leningrad Technical Committee on Turbine Construction, S.A. Kantor.
The Paper by I.A. Oding (Institute of Metallurgy, Ac.Sc.USSR) "Structural Theory of Creep" contained an account of the author's theory.
V.S. Ivanova and L.K. Gordiyenko (Institut metallurgii AN SSSR - Institute of Metallurgy of the Ac.Sc.USSR) in the paper "Experimental Investigation of Some Aspects of the Theory of Structural Creep" described results corroborating aspects of Oding's theory.
L.A. Kuznetsov (Kirovsky metallichesky zavod im. Lenina - Kirov Metal Factory im. Lenin) in his paper "Problems in the Yield of Static Strength of Turbine Components Working at High Temperature" dwelt on data obtained in Leningrad industrial undertakings indicating the need for further improvement in design and constructional procedure. The basic problem, in the author's opinion, is not so much the investigation of the stresses in individual components as the investigation of the limiting states of actual constructions. The author also noted the need for experimental investigation of model rotors, disks and frameworks of turbines and suggested setting before the Government the question of organising such an assembly in one of the factories with complete centralisation and co-ordination of work in this direction. The author criticised the inadmissible unplanned work taking place at the present time in experimentry, when each undertaking must itself solve problems relating to gauge, cements for them, methods of testing, and appropriate apparatus.
L.A. Blizer (TsIAM) presented a paper on "Standards of Strength of Components at High Temperatures"
A.P. Guzenko (TsNIITMASh) gave a paper on "Experimental Investigation of the Bearing Capacity of Disks"
M.A. Koren' (Leningradskiy metallichesky zavod im. Stalin - Leningrad Metal Factory imeni Stalin) in the paper "Apparatus for Testing Sustained Strength of Some Turbine Stator Components" dealt with items of equipment constructed at his factory for investigating the stress state in a number of components: diaphragms, pin connections, etc.
V.S. Namestnikov (Moskovskiy gosudarstvennyy universitet - Moscow State University) gave a paper on "Creep of Heat-resistant Alloys at High Temperature". The author described experimental investigations on the behaviour of the steels EI-257 and EI-405 under conditions of complex stress and high steady temperature.

Card 1/7

Card 3/7

NAMESTNIKOV, V.S. (Novosibirsk)

Creep at variable temperatures under conditions of a complex
stressed state. PMTF no.4:97-98 Jl-Ag '64.

(MIRA 17:10)

NAMESTNIKOV, V.S. (Novosibirsk)

Direct and inverse torsion in conditions of creep. PMTF
no.1:121-122 My-Je '60.   (MIRA 14:8)
(Creep of metals) (Torsion)

NAMESTNIKOV, V.3.

One hypothesis in the theory of triaxial creep. Izv.Sib.otd.AN
SSSR no.2:3-14 '60.   (MIRA 13:6)

1. Institut gidrodinamiki Sibirskogo otdeleniya AN SSSR.
            (Creep of metals)

NAMESTNIKOV, V.S. (Novosibirsk)

Creep in duralumin under conditions of a complex state of stress.
PMTF no.2:157-162 Jl-Ag 60.   (MIRA 14:6)
        (Creep of metals) (Strains and stresses)

10.7300   1413

31006
· S/124/61/000/009/043/058
D234/D303

AUTHOR: Namestnikov, V.S.

TITLE: On the hypothesis of proportionality of deviators
                 in conditions of creep at variable loads and non-
                 varying principal axes

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 9, 1961, 23,
                 abstract 9 V188 (Zh. prikl. mekh. i tekhn. fiz.,
                 1960, no. 3, 212-214)

TEXT: The author gives the results of an experimental
investigation of the hypothesis of proportionality of deviators dur-
ing creep in conditions of variable loads, when the principal axes
of stresses do not rotate. A similar case takes place for a propor-
tional load. The investigation was carried out on thin-walled tubu-
lar specimens made of Д16Т (D16T) duraluminum with torsion and
extension during 50 - 100 hours, at a temperature of 150°C. The
ratio of the tangential stress to the normal stress remained con-

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31006
S/124/61/000/009/043/058
D234/D303

On the hypothesis...

stant during principal loading and during all additions and subtrac-
tions of loads. The hypothesis of proportionality of deviators in
the deformational theory of creep, also in the theory of creep flow
type in case of load proportionality has the form $\frac{\sigma}{3\varepsilon^P} = \frac{\tau}{\gamma^P}$ where

ε^P and γ^P are the creep deformations of elongation and shear. The
correctness of the theory is judged by the coincidence of the left-
hand side and the right-hand side of the equation. In the case of
proportional load, the hypothesis of proportionality of deviators
for the theory of creep is satisfactorily fulfilled. $\sqrt{\text{Abstracter's}}$
note: Complete translation $\sqrt{}$

Card 2/2

NAMESTNIKOV, V.S. (Novosibirsk); KHVOSTUNKOV, A.A. (Novosibirsk)

Creep in duralumin under both constant and variable loads.
PMTF no.4:90-95 N-D '60.   (MIRA 14:7)
          (Creep of metals)
          (Duralumin)

88525

10,9210

S/179/60/000/006/021/036
E081/E135

AUTHOR: Namestnikov, V.S., (Novosibirsk)

TITLE: Remarks on the Creep of Steel ЭИ 257 (EI 257) Under Complex Stress Conditions

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960, No. 6, pp. 137-138

TEXT: The paper is a continuation of previous work (Refs 1-3). In Ref.1, the relation (1) was proposed to describe the results of experiments on thin-walled tubes of the austenitic steel ЭИ 257 (EI 257) in combined torsion and tension. This formula did not apply over the whole range of stresses, particularly in test No.5 (Ref.1, Table 1). Further investigation showed that the following equation applied over a wider range of stress:

$$\dot{p}_i p_i{}^\alpha = \varkappa \exp\left(\frac{\sigma_i{}^2}{A} - \frac{\tau_{max}{}^2}{A_0}\right) \qquad (2)$$

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S/179/60/000/006/021/036
E081/E135

Remarks on the Creep of Steel EI 257 Under Complex Stress
Conditions

The quantities in Eq.(2) are defined by:

$$P_i = \sqrt{(\epsilon^P)^2 + \frac{1}{3}(\gamma^P)^2}, \qquad \sigma_i^2 = \sigma^2 + 3\tau^2,$$

$$\tau_{max}^2 = \frac{1}{4}\sigma^2 + \tau^2 \qquad\qquad (3)$$

where ϵ^P, γ^P are the creep strains in extension and shear;
σ and τ are the normal and shear stresses in the plane of the
cross-section of the tube; $0.34(1 + \alpha) = 1$; $\varkappa = 2.66 \cdot 10^{-15}$ per
hour; $A = 19.55$ kg/mm^2; $A_0 = 11.85$ kg/mm^2 at 600 °C.
In Fig.1, the experimental curves of P_i, as functions of time
(hours), are compared with values calculated from Eq.(2); the
ordinates for test 5 are shown on the right, and the values of σ_i
and λ ($\lambda = \tau/\sigma$) are:

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S/179/60/000/006/021/036
E081/E135

Remarks on the Creep of Steel EI 257 Under Complex Stress Conditions

	3	5	6	8	9	10	11	12	13
σ_i =	19	25.5	17	17	17	13'	17	12	12
λ =	∞	1.4	1.5	0	∞	∞	1.5	∞	0

Fig.2 shows the application of Eq.(2) to the results of experiments with variable loading (Ref.2). In Figs 1 and 2, the continuous lines are experimental curves and the dotted lines are curves calculated from Eq.(2); in Fig.2 the vertical dashed line represents the moment of change of load. For curves 1 (Fig.2), the first part corresponds to $\lambda = \infty$, the second to $\lambda = 0$. For curves 2, the first part corresponds to $\lambda = 0$ and the second to $\lambda = \infty$. For curves 3, the first part corresponds to $\lambda = 1.5$ and the second to $\lambda = 0.26$. In previous work of the author (Ref.2) the following equation has been used:

$$P_i = \int_0^t \sqrt{(\dot{\varepsilon}^P)^2 + \frac{1}{3}(\dot{\gamma}^P)^2}\ dt \qquad (4)$$
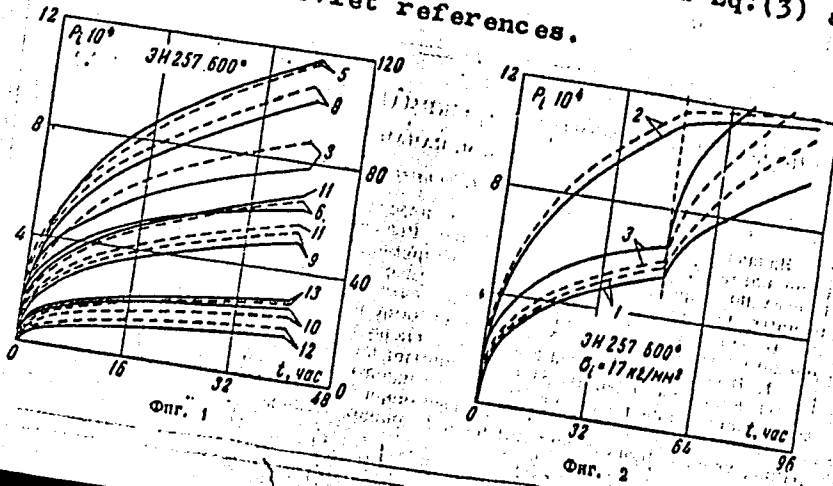
Card 3/5

Remarks on the Creep of Steel EI 257 Under Complex Stress
Conditions

S/179/60/000/006/021/036
E081/E135

88525

However, the results may differ significantly from Eq.(3) and not
agree with experiment.
There are 2 figures and 3 Soviet references.

35

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Фиг. 1

Фиг. 2

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88525

S/179/60/000/006/021/036
E081/E135

Remarks on the Creep of Steel EI 257 Under Complex Stress
Conditions

SUBMITTED: June 8, 1960

X

Card 5/5

NAMESTNIKOV, V.S. (Novosibirsk)

Rupture time in creep. PMTF no.1:137-139 Ja - F '61.

(Creep of materials)

(MIRA 14:6)

NAMESTINIKOV, V.S. (Novosibirsk); RABOTNOV, Yu.N. (Novosibirsk)

Hypothesis of the equation of state in the case of creep. PMTF
no.3:101-102 S-O '61.   (MIRA 14:8)
    (Equation of state) (Creep of materials)

S/207/61/000/004/011/012
E032/E514

AUTHORS: Namestnikov, V.S. and Rabotnov, Yu.N. (Novosibirsk)

TITLE: Hereditary theories of creep

PERIODICAL: Akademii nauk SSSR. Siberskoye otdeleniye,
             Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki.
             no.4, 1961, 148-150

TEXT: This is a continuation of previous work (Ref.5: Vestn.
MGU, 1948, No.10; Ref.9: PMTF, 1960, No.4). A review is given of
the stress-strain relations in the form of integral equations
which are suitable for describing the creep properties of materials.
Experimental results for the creep of the Д-16Т (D-16T) alloy
subjected to constant and step loading at 200 and 150°C, and the
stress relaxation at 150°C are compared with the theoretical
curves calculated from the equations of the second of the present
authors (Ref.5) and of N. Kh.Arutyunyan (Ref.3: "Some problems in
the theory of creep", GTTI, 1951) and M. I. Rozovskiy (Ref.6: ZhTF,
1951, v.21, No.11). Although the general trend of the experimental
results is reproduced by the theoretical curves, the overall
numerical agreement is not good. There are 4 figures and
Card 1/2

Hereditary theories of creep   S/207/61/000/004/011/012
                                      E032/E514

9 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The English-
language references read as follows: Ref.4: Lee E.H., Viscoelastic
stress analysis. Structural mechanics, Pergamon Press, 1960;
Ref.7: Turner F.H., Blumquist K.E. A study of the applicability of
Rabotnov's creep parameter for aluminium alloy; J.Aeronaut.Sci.,
1956, 12, 23.

SUBMITTED: March 31, 1961

Card 2/2

S/207/62/000/006/017/025
E193/E383

AUTHOR: Namestnikov, V.S.   (Novosibirsk)

TITLE: Relaxation under a complex state of stress

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy
        fiziki, no. 6, 1962, 105 - 108

TEXT: The object of the present investigation was to obtain
experimental confirmation of the hypothesis of proportionality of
deviators for the case of a complex state of stress. To this end,
the value of $\lambda = \tau/\sigma$, where σ and τ are, respectively,
the normal and tangential stresses, was measured on thin-walled
tube specimens, stressed simultaneously in torsion and in tension.
A specially designed creep-testing machine, incorporating elec-
tronic devices for maintaining both shear strain and elongation at any
given constant level, was used in the experiments conducted on
duralumin ($\Delta16T$ (D16T)) and copper at 150 °C. The duration of
tests ranged from 1-56 hours. The experimental procedure consisted
of gradually increasing (in 45 sec) the tensile and shear stress
to predetermined values and then switching-on the devices,
maintaining both the elongation and shear strain at a constant

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Relaxation under ....

level, In some cases, both the tensile and shear stresses were
increased at a certain stage without changing the magnitude of λ .
Typical results are reproduced in Fig. 1, where λ is plotted
against time (t, hours), curve 1P relating to copper specimens
and the other curves to various duralumin specimens. The maximum
deviation in λ from its initial value exceeded 14% only in four
specimens out of eighteen tested. Comparison of these results
with thos reported earlier (the author - PMTF, no. 3, 1960) leads
to the conclusion that the hypothesis of proportionality of
deviators is valid as much under conditions of relaxation as for
creep under variable loads/under conditions of proportional
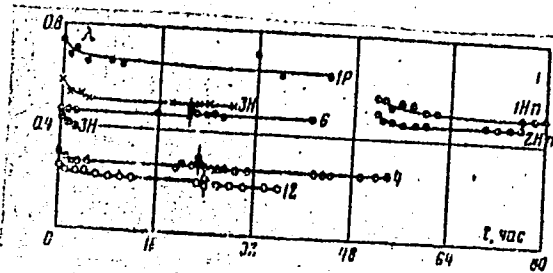loading. There are 2 figures and 1 table.

SUBMITTED: July 7, 1962

Card 2/2   Fig. 1

NAMESTNIKOV, V. S,

"Combined-stress creep under changing loads."

report to be submitted for the Joint International Conf. on Creep, New York, 25-29 Aug 1963.

NAMESTNIKOV, V.S. (Novosibirsk)

Relaxation of stresses in a thin-walled tube. PMTF no.5:159-
160 S-O '63.   (MIRA 16:11)

NAMESTNIKOV, V.S. (Novosibirsk)

"On creep of metals"

Report presented on the 2nd All-Union Congress on Theoretical and Applied
Mechanics, Moscow 29 Jan - 5 Feb 64.

NAMESTNIKOV, V. S.

"Metal creep in the presence of complex two-dimensional stress."

report submitted for 11th Intl Cong of Theoretical & Applied Mechanics & General
Assembly, Munich, 30 Aug-5 Sep 64.

ACCESSION NR: AR4036262

8/0137/64/000/003/10444/1044

SOURCE: Referativny*y zhurnal. Metallurgiya, Abs. 31257

AUTHOR: Namestnikov, V. S.

TITLE: Creep in a state of combination of stresses

CITED SOURCE: Sb. Polzuchest' i dlitel'n. prochnost'. Novosibirsk, Sib. otd.
AN SSSR, 1963, 100-109

TOPIC TAGS: Creep testing, stress combination, torsion, tension

TRANSLATION: In order to verify the existing hypotheses concerning creep, thin-
walled tubular specimens made of D16T alloy were tested for creep in a state of
combination of stresses (torsion + tension). The first group of specimens was
tested under constant loads, and the second, under variable stepped loads under
conditions of proportional loading. The experimental creep curve for combined tor-
sion and tension is located between the curves obtained for simple torsion and sim-
ple tension. Calculated creep curves for constant loads coincide with the experi-

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ACCESSION NR: AR4036262

mental ones (within the limits of scatter). Creep under proportional stepped load-ing for any stress condition is reduced to the case of simple tension, i.e., in any stress condition the extent of agreement between theory and experiment is the same as in the case of simple tension. Further verification of these results is neces-sary for other types of variable proportional loads and materials. V. Terent'yev.

DATE ACQ: 17Apr64   SUB CODE: ML   ENCL: 00

Card 2/2

S/0207/64/000/002/0099/0105

ACCESSION NR: AP4034276

AUTHOR: Namestnikov, V. S. (Novosibirsk)

TITLE: On creep in aluminum alloys under variable loads

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 2, 1964, 99-105

TOPIC TAGS: aluminum alloy, variable load, creep, stress strain curve, constant stress, stepwise loading, elastic limit, plastic limit, 4SHP, aluminum alloy D16AT

ABSTRACT: The experimental results on the creep behavior of alloys of aluminum under uniaxial tension have been reported. Specimens of D16AT alloy of aluminum 100 mm by 10 mm were used under 2% deformation at 150C temperature. The experiments were conducted in a four-sectioned creep test instrument (4SHP) built in the Institut gidrodinamiki SO AN SSSR (Hydrodynamic Institute SO AN SSSR). By successive constant speed loadings at specified stress levels, followed by a gradual decrease in the load, the instantaneous stress-strain curve of the specimen and the creep effect were studied. For $\sigma > 1$ kg/mm^2/min creep was found to be negligible. Creep data were successfully fitted with curves given by

$$p'p^\alpha = k\sigma^n ,$$

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under constant stress σ and for the following magnitudes

$$\bar{a} = 1.439, \qquad n_{\prime} = 0.41$$
$$n = 5.14, \qquad k = 8.02 \cdot 10^{-17} \quad \text{at } \sigma \leqslant 27.5 \ \text{kg/mm}^2$$
$$n = 29.07, \qquad k = 2.23 \cdot 10^{-61} \quad \text{at } \sigma \geqslant 27.5 \ \text{kg/mm}^2.$$

The results of creep behavior under stepwise loading were tabulated. With increasing loads, the results show lower values for stresses below the elastic limit and higher values above this limit than predicted theoretically. Under decreasing loads the experimental curves show larger values of creep than those predicted by theory. To determine the stepwise loading creep analytically, the above expression for p was integrated over the limits

$$t = t_0, \qquad \sigma = \sigma_0, \qquad p = p_0$$
$$\sigma = \sigma_0 \pm \sigma'(t - t_0) \quad \text{at } t \geqslant t_0$$

and was compared with the experimental data. Agreement was found to be satisfactory for the case $\Delta \sigma / \sigma_0 \ll 1$. N. S. Bilesov took part in the experimental

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ACCESSION NR: AP4034276

measurements. Orig. art. has: 8 formulas, 5 figures, and 3 tables.

ASSOCIATION: none

SUBMITTED: 16Oct63

SUB CODE: MM

NO REF SOV: 004

ENCL: 00

OTHER: 004

Card 3/3

VILESOVA, I.S.; NAMESTNIKOV, V.S. (Novosibirsk)

A hardening parameter. PMTF no.3:177-179 My-Je '64.
(MIRA 17:6)

VERGAZOV, Vasiliy Stepanovich; NAMESTNIKOV, V.V., red.; ALMAZOV,
V.Z., red.izd-va; MAYOROV, V.V., tekhn. red.

[Stoker's guide in questions and answers] Sputnik koche-
gara v voprosakh i otvetakh. Moskva, Izd-vo M-va kommun.
khoz.RSFSR, 1963. 102 p. (MIRA 17:3)

BYLINSKIY, Ye.N.; NAMESTNIKOV, Yu.G.; BERLYAT, A.M.

New data on the recent tectonics of the lower part of the Mezen'
Basin. Izv. AN SSSR. Ser. geog. no.1:53-55 Ja-F '64.

(MIRA 17:3)

1. Geologicheskiy komitet SSSR i Nauchno-issledovatel'skaya
laboratoriya geologicheskikh kriteriyev otsenki perspektiv
neftegazonosnosti.

NAMESTNIKOVA, L.N.; EDEL', Yu.P.; SEMENENKO, L.A.

Desirability of a postmortem quantitative determination of alcohol in the contents and tissues of the stomach. Sud. - med. ekspert. 6 no.3:55 Jl-S'63.   (MIRA 16:10)

1. Kafedra sudebnoy meditsiny (zav. - N.P.Marchenko) Khar'-kovskogo meditsinskogo instituta i Khar'kovskoye oblastnoye byuro sudebno-meditsinskoy ekspertizy (nachal'nik V.M.Moiseyev).
        (ALCOHOL IN THE BODY) (AUTOPSY)

KAMBAROV, Yu.G.; MEKHTIYEV, S.D.; Prinimali uchastiye: SEROV, A.A.;
    NAMESTNIKOVA, V.M.; DZHAZALIYEVA, R.D.; NAUMETS, A.M.

    High-speed pyrolysis of the gasoline fraction in a pilot
    plant. Khim. prom. no.5:346-348 My '63.   (MIRA 16:8)

TSYGANOV, V.A.; GOLYAKOV, P.N.; BEZBORODOV, A.M.; NAMESTNIKOVA, V.P.; KHOPKO, G.V.;
SOLOV'YEV, S.N.; MALYSHKINA, M.A.; BOL'SHAKOVA, L.O.

Biology and isolation of the antifungal antibiotic 26/1.
Antibiotiki 4 no.1:21-26 Ja-F '59.   (MIRA 12:5)

1. Leningradskiy nauchno-issledovatel'skiy institut antibioti-
kov.
            (ANTIBIOTICS,
                 antibiotic 26/1, fungicidal properties &
                 biol. (Rus))
            (FUNGICIDES,
                 antibiotic 26/1 (Rus))

NAMESTNIKOVA, V.P.

Study of the fermentation conditions for strain 26/1. Report No.1:
Effect of the medium composition on antibiotic formation. Eksp. i
klin. issl. po antibiot. 2:229-234 '60.   (MIRA 15:5)
                              (ANTIBIOTICS)
          (BACTERIOLOGY—CULTURES AND CULTURE MEDIA)

BEZBORODOV, A.M.; NAMESTNIKOVA, V.P.; ISAKOVA, N.P.; KHOPKO, T.V.

Study of fermentation conditions for strain 26/1. Report No.2:
Study of the fermentation conditions for strain 26/1 in laboratory
fermentors. Eksp. i klin. issl. po antibiot. 2:235-240 '60.
(MIRA 15:5)

(ANTIBIOTICS)
(BACTERIOLOGY---CULTURES AND CULTURE MEDIA)

BEZBORODOV, A.M.; NAMESTNIKOVA, V.P.; KHOPKO, T.V.

Study of fermentation conditions for strain 26/1. Report No.3:
Effect of oils and fatty acids on the activity of culture liquid
of strain 26/1. Eksp; i klin. issl. po antibiot. 2:241-244 '60.
(MIRA 15:5)

(ANTIBIOTICS)   (ACIDS, FATTY)
(OILS AND FATS)

NAMESTNIKOVA, V.P.

Study of the fermentation conditions for strain 26/1. Report No.4: Effect of various sources of carbon on the activity of the culture liquid of strain 26/1. Eksp. i klin. issl. po antibiot. 2:245-249 '60.
(MIRA 15:5)

(ANTIBIOTICS)   (CARBON)
(BACTERIOLOGY--CULTURES AND CULTURE MEDIA)

BEZBORODOV, A.M.; NAMESTNIKOVA, V.P.

Studies on conditions for the biosynthesis of antibiotic 26/1.
Antibiotiki 5 no.2:20-23 Mr-Ap '60.   (MIRA 14:5)

1. Leningradskiy nauchno-issledovatel'skiy institut antibiotikov.
                    (ANTIBIOTICS)

TSYGANOV, V. A.; ZHUKOVA, R. A.; BODANOVA, N. P.; NAMESTNIKOVA, V. P.

"A new species of the streptomycete 2732/3, producing an antibiotic pigment.

report submitted for Antibiotics Cong, Prague, 15-19 Jun 64.

Cent Antibiotic Inst, Leningrad.

MOROZOV, V.M.; NAMESTNIKOVA, V.P.

Using luminescence and capillary-luminescence analyses for
primary identification of the cultures of Actinomyces
levoris cultures. Mikrobiologiia 34 no.3:533-538 My-Je '65.

(MIRA 18:11)

1. Leningradskiy nauchno-issledovatel'skiy institut anti-
biotikov.

TSYGANOV, V.A.; KONEV, Yu.Ye.; NAMESTNIKOVA, V.P.

Characteristics of the actinomycete No.44 B/I, the producent
of mycoheptin, a new antifungal antibiotic. Antibiotiki 10
no.7:599-602 Jl '65.   (MIRA 18:9)

1. Leningradskiy nauchno-issledovatel'skiy institut antibiotikov.

BOGDANOVA, N.P.; KOVALEVA, L.A.; SHENIN, Yu.D.; SOLOV'YEV, S.N.; TSYGANOV, V.A.;
      ZHUKOVA, R.A.; NAMESTNIKOVA, V.P.

   Violacein, a new antibiotic. Mikrobiologiia 34 no.4:623-626   Jl-Ag
   '65.   (MIRA 18:10)

   1. Leningradskiy nauchno-issledovatel'skiy institut antibiotikov.

NAMET, Mihaly

Shortwave amateur antennas. (Continuation). Radiotechnika 10 no.3: 75-76 Mr '60.

NAMETH, E.

Textile defects caused by sewing. p. 288. Magyar Textiltechnika. Budapest.
No. 8, Aug. 1955.

Source: East European Accessions List, (EEAL), Lc, Vol. r, No. 2, Feb. 1956

ACCESSION NR: AP4024410   S/0204/64/004/001/0137/0141

AUTHORS: Nametkin, N.A.; Berezkin, V.G.; Vanyukova, N.Ya.; Vdovin,V.M.

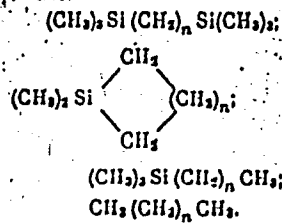TITLE: Gas-liquid chromatography of several silicohydrocarbons and
      paraffins.

SOURCE: Neftekhimiya, v. 4, no. 1, 1964, 137-141

TOPIC TAGS: gas liquid chromatography, paraffin, silicohydrocarbon,
elution characteristic, retention time, chromatographic analysis

ABSTRACT: The elution characteristics of hydrocarbons and of sili-
cohydrocarbons which are structurally similar analogs of the hydro-
carbons were investigated in order to determine if mixtures of these
materials can be identified chromatographically. The relative reten-
tion time of certain silicohydrocarbons and of paraffins on two stat-
ionary liquid phases of different polarity (polymethylphenylsiloxane
(I) and polyethyleneglycol M.W. 154) (II)) was determined at differ-
ent temperatures. The following homologous series of hydrocarbons and.
silicohydrocarbons were studied

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ACCESSION NR: AP4024410

$$(CH_3)_3 Si (CH_2)_n Si(CH_3)_3;$$

$$(CH_3)_2 Si \underset{CH_2}{\overset{CH_2}{\diamondsuit}} (CH_2)_n;$$

$$(CH_3)_3 Si (CH_2)_n CH_3;$$

$$CH_3 (CH_2)_n CH_3.$$

Comparison of the retention time in phases I and II at 100 and 75C, respectively, is shown in fig. 1: The $(CH_3)_3$ $Si(CH_2)_n$ $Si(CH_3)_3$ type compounds can be identified in mixtures with paraffins and other silicohydrocarbons. By lowering the temperatures of the chromatographic columns the selected phases I and II can be used to identify the other series of compounds (fig. 2). It is recommended that the elution characteristic be determined on the different stationary phases at different temperatures and not at the same temperature. The logarithm of the relative retention time of the silicohydrocarbons can be represented as the sum of the partial values corresponding to the specific bonds: (V.G. Berezkin and V.S. Kruglikova, Neftekhimiya, No. 6, 845 (1962)):

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ACCESSION NR: AP4024410

$$\lg \alpha_i = \sum_{ij} n_{ij} \Gamma_{ij} - \sum n_{ij} \Gamma_{ij},$$

where α_i = relative retention time; Γ_{ij} = value of $\lg \alpha_i$ corresponding to the determined combination of bonds or structural elements and n_{ij} = number of given structural elements in the molecule. The values for the $CH_2 - CH_2$ bond are practically the same for paraffins and for the silicohydrocarbons, and this is in agreement with the similarity of the physical and chemical properties of the tetraorgano-silicon compounds and of the structurally similar hydrocarbons. Orig. art. has: 3 tables, 2 figures, 1 equation and 1 formula

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR im. A.V. Topchiyeva (Institute of Petrochemical Synthesis, AN SSSR)

SUBMITTED: 13May63   DATE ACQ: 17Apr64   ENCL: 02

SUB CODE: CH   NR REF SOV: 009   OTHER: 003
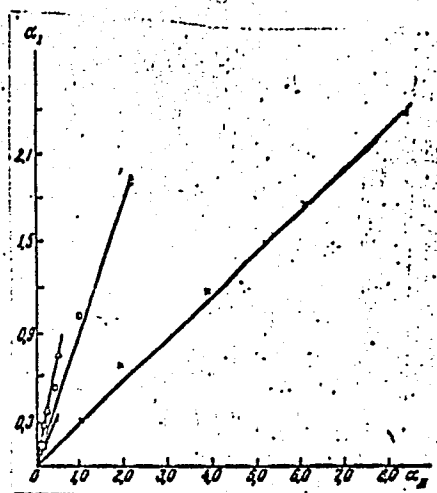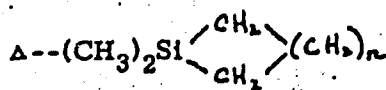
Card 3/5

ACCESSION NR: AP4024410

Fig. 1

Relationship between the relative retention capacity of silicohydrocarbons and paraffins on polymethylphenylsiloxane oil (α_I at 100C) and polyethyleneglycol (α_{II} at 75C).

x--compounds of the series $(CH_3)_3Si(CH_2)_n Si(CH_3)_3$;

O-- n-paraffins;

•--$(CH_3)_3Si(CH_2)_nCH_3$

Δ--$(CH_3)_2Si\overset{CH_2}{\underset{CH_2}{<}}(CH_2)_n$
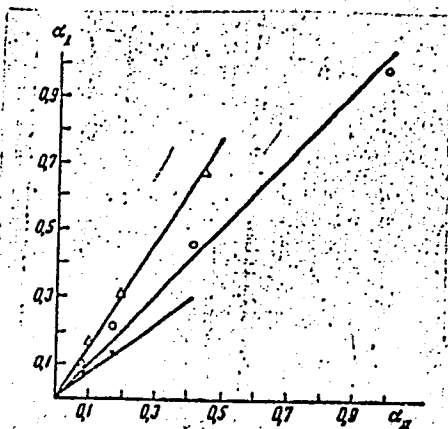
Card   4/5

Fig. 2
Relationships between α_I at 75C and
α_{II} at 50C. Designations the same as in
fig. 1.

Card   5/5

ACC NR: AP7002937   SOURCE CODE: UR/0020/66/171/006/1345/1347

AUTHOR: Nametkin, N. S. (corresponding member AN SSSR); Vdovin, V. M.; Babich, E. D.; Arkhipova, T. N.
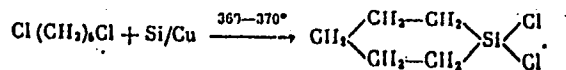
ORG: Institute of Petrochemical Synthesis im. A. V. Topchiyev, Academy of Sciences, SSSR (Institut neftekhimicheskogo sinteza Akademii nauk SSSR)

TITLE: Synthesis of certain 1,1-substituted derivatives of 1-silacyclohexane

TOPIC TAGS: organosilicon compound, cyclohexane, polysiloxane

ABSTRACT: 1,1-Substituted 1-silacyclohexane was prepared by "direct synthesis" as follows:

$$Cl(CH_2)_5Cl + Si/Cu \xrightarrow{367-370°} CH_2 \begin{array}{c} CH_2-CH_2 \\ CH_2-CH_2 \end{array} Si \begin{array}{c} Cl \\ Cl \end{array}$$
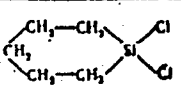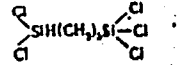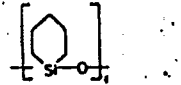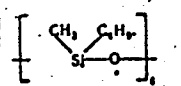
The product (obtained in 23% yield) was then used to prepare linear polysiloxanes. The compounds obtained are shown in Table 1. A greater thermal-oxidative stability of silacyclohexane derivatives as compared to that of dialkyl ones was observed. Orig. art. has: 1 figure and 1 table.

Card 1/2   UDC: 546.287

ACC NR: AP7002937

Table 1

Compound	B.P, °C/mm Hg	n_D^{20}	d_4^{20}	Cl, % calc.	Cl, % Found	Mol. weight calc.	Mol. weight Found
(structure)	167—168	1.4070	1.1457	42.0	42.0	169	167
(structure)	112—115/5	—	—	58.2	57.10	303.5	309
(structure)	225—230/6	MP 65°	—	—	—	456	451
(structure)	230—235/7	1.4295	—	—	—	—	—

SUB CODE: 07/   SUBM DATE: 16Mar66/   ORIG REF: 006/   OTH REF: 005

Card 2/2

POLYAKOVA, A.M., SUCHKOVA, M.D., VDOVIN, V.M., NAMETKIN, N.S.,
PRINTULA, N.A.

Silicon-orgaino compound with alternating siloxane and
carbon elements.

Report presented at the 12th Conference on high molecular weight compounds
devoted to monomers, Baku, 3-7 April 62

S/832/62/000/000/001/015.
D244/D307

AUTHORS: Nametkin, N.S., Topchiyev, A.V. and
                  Chernysheva, T.I.

TITLE: The addition of hydrogen silanes to olefinic
                  hydrocarbons

SOURCE: Issledovaniya v oblasti kremniyorganicheskikh
                  soyedineniy; sintez i fiziko-khimicheskiye
                  svoystva. Sbornik statey. Inst. neftekhim. sint.
                  An SSSR, Moscow, Izd-vo AN SSSR, 1962, 5 - 27

TEXT: The reactions of tribromosilane, methyl- and
ethyldibromosilane and of the corresponding Cl compounds with
normal, iso-, and cyclic olefins were investigated, to discover
the relative reactivity of halogenosilicon compounds with double
bonds in olefinic hydrocarbons. It was also intended to study the
effect of the olefin structure on the yield of the reaction pro-
ducts. The reactions were initiated with ultraviolet light and
benzoyl peroxide. It was found that the bromo-compounds were

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considerably more active than the corresponding chloro-compounds, the activity decreasing in the order: $HSiBr_3 > HSiCl_3 > HSiRBr_2 > HSiRCl_2$. In the reactions of olefins with trihalogenosilanes, the yields of alkyl-trihalogenosilanes were higher for the normal than for the iso-olefins. An increase in the molecular weight of the olefins (from 84 to 140) had little effect on the yields, but a further increase to 244 ($C_{16} H_{32}$) decreased the yields sharply. The alkyltrihalogenosilanes obtained were used for the preparation of a series of silicones by reaction with lithium or magnesium-organic compounds. It was established that tetrachlorodisilyl-methane reacts with olefins to form alkyltetrachlorodisilymethane in the first stage, and the dialkyl compound in the second stage. Platinized carbon black and chloroplatinic acid were successfully used to initiate the reaction between trialkoxysilanes and α-olefins. With chloro-platinic acid, (1N in iso-propyl alcohol), the products were obtained generally in 30 - 40 % yield with the exception of tri-(tert.butoxy)-silane which gave a 12 % yield. Decyltributoxy- and nonyltri-iso-propoxy silanes were also obtained by the interaction of decyl- and nonyl- trichlorosilanes with the corresponding alcohols.

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The two methods gave products with identical properties, which
indicated that the reactions do not obey Markovnikov's rule. The
combination of tribenzylsilane with α- olefins was also investi-
gated, using chloroplatinic acid as catalyst. Tribenzylalkylsilanes
were obtained in 50 - 60 % yield. The products were liquids boiling
at 253° - 261°C. The similarity of physical properties of the pro-
ducts obtained with the aid of the catalyst and via lithium-organic
compounds, indicates again that the Markovnikov's rule is not obeyed.
The reaction of diethyl-, diphenyl-, methylphenyl-, dibutyl- and
ditolyl silanes with α- olefins was conducted with platinized carbon
black, by heating the mixtures in sealed ampoules, for 20 hours at
180 - 200°C. The diethyl- and dibutyl- silanes combined with the
olefins giving yields half as high (about 20 %) as those for phenyl-
methyl- and diphenyl silane (40 - 65 %). There are 13 tables.

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S/832/62/000/000/002/015
D244/D307

AUTHORS: Topchiyev, A.V., Nametkin, N.S. and
                  Durgar'yan, S.G.

TITLE: The addition of hydrogen silanes with mono-
                  and dialkyl derivatives of silicon

SOURCE: Issledovaniya v oblasti kremniyorganiches-
                  kikh soyedineniy; sintez i fiziko-khimiches-
                  kiye svoystva. Sbornik statey. Inst. neftekhim.
                  sint. AN SSSR. Moscow, Izd-vo AN SSSR, 1962,
                  28 - 55

TEXT: The authors investigated the combination of
trialkyl (phenyl, chloro-) diallylsilanes and dialkyl (phenyl,
chloro-) diallylsilanes with trichlorosilane, triphenylsilane
and different trialkylsilanes in the presence of benzoyl peroxide,
platinized carbon black (16% by weight of Pt) and chloroplatinic
acid (0.1 N in iso-propyl alcohol). The reactions were conducted
by heating the reactants under normal or increased pressure (auto-
claves), from 45° to 210°C, for 2 - 25 hours. The platinum catalysts
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gave generally much higher yields of the products than benzoyl peroxide. Thus, for example, in the presence of H_2PtCl_6, $SiCl_3H$ combined with trimethyl- and triethylallylsilane, giving 50 % yields, while no reaction took place with benzoyl peroxide. The reaction of triethyl- and tripropyl silanes with triethyl- and tripropylallylsilanes, in the presence of Pt, gave only 20 % yields. Triethyl-, tripropyl- and tributyl-silanes combine with diethyl-, dipropyl- and dibutyl-diallylsilanes forming from 13% to 29% of the addition products with the use of Pt catalysts. Studies of the reaction indicate that the increasing size of the straight chain radicals in the trialkylallyl and dialkylallyl silanes increases the activity of double bonds in the allyl radicals. When alky radicals in alkylallylsilanes are replaced by more electronegative groups (Cl or phenyl) the double bond becomes even more active. Infrared studies of the reaction products showed that the reactions in the presence of Pt catalysts and benzoyl peroxide proceed in opposition to Markovnikov's rule and all the products have the following structure:

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$R_3Si-CH_2-CH_2-SiR_3'$ and $R_3'Si-CH_2-CH_2-CH_2-\underset{R}{\overset{R}{Si}}-CH_2-CH_2-CH_2-SiR_3'$

where R and R' = CH_3, C_2H_5, C_3H_7, C_4H_9, C_6H_5, Cl. There are 22 figures and 13 tables.

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S/832/62/000/000/003/015
D244/D307

AUTHORS: Nametkin, N.S., Topchiyev, A.V.   and
                  Chernysheva, T.I.

TITLE: Interaction of hydrogen silanes with
                  unsaturated compounds containing
                  functional groups

SOURCE: Issledovaniya v oblasti kremniyorgani-
                  cheskikh soyedineniy; sintez i fiziko-
                  khimicheskiye svoystva. Sbornik statey.
                  Inst. neftekhim. sint. An SSSR, Moscow,
                  Izd-vo AN SSSR, 1962, 56 - 75

TEXT: To discover whether hydrogen silanes would·
react with the double bond in unsaturated compounds containing an
active hydrogen atom, various silanes were reacted with allylamine,
allyl alcohol, and tertiary unsaturated alcohols. Allylamine was
reacted with triethyl-, tripropyl-, tributyl-, dimethylphenyl-,
diethylphenyl-, methyldiphenyl-, alkyldiphenyl-, triphenyl- and
triethoxy- silanes, using chloroplatinic acid as a catalyst. The
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