

80416

RUM/8-59-1-9/24

Study of the Behavior of Constructions by Experimenting With Mockups From Plastic Materials

at bending: 480 - 600 kg/sq cm. The values of the elasticity module and flow, depend from the thermal treatment of the material. "SDP-2", "SDP-3" and "SDP-4" become white at tension and black at compression. The characteristics diagrams of the second and third varieties are very similar to the theoretical diagrams of Prandtl, being almost perfectly elastic for $\sigma < \sigma_0$ and perfectly plastic for $\sigma = \sigma_0$ (Figure 2). The first experiment has been carried out within the Chair of Mechanical Constructions of the Institutul de Constructii (Institute of Constructions) in Bucharest with the "SDE" plastic, by checking the frequency of the proper vibrations of a seven-story frame (Figure 4). The plastic mockup has been built in a scale of 1:30. The concentrated masses have been reduced to 1/40,000 and the time value scale was $t_m = \frac{1}{40} t_p$. The experiments have proved that the hypothesis of the infinite rigid spars of the frame is admissible. New statical computation methods of tower constructions have been checked by another experiment [Ref 2], accomplished with "SDE" material. By using "SDP-1" material, the moment of the appearance of the first plastic joint, the points of the appearance of the joint, their order and the computation of the bearing capacity have been checked by a frame (Figure 6), loaded symmetrically [Ref 2]. Based

Card 7/ 11

80416

RUM/8-59-1-9/24

Study of the Behavior of Constructions by Experimenting With Mockups From Plastic Materials

on a computation of G.I. Rozenblat [Ref 3], the appearance order of the plastic joint should be, as shown by Figure 6. According to the calculation of the first order, the breaking load is

$$P_r = \frac{8 M_0}{l^2}, \quad M_0 = 103 \text{ kg. cm}, \quad P_r = 82.4 \text{ kg.}$$

According to the calculation of the second order [Ref 6], the breaking load is $P_r = 72.6 \text{ kg.}$ The real breaking load resulting from the experiment was 76 kg. The results obtained from mockups can be used for the construction of normal size if:

$$\eta = \frac{1}{1 + 1.6 \left[\frac{N_1}{P} \cdot \frac{y_1}{l} + \frac{N_2}{P} \cdot \frac{y_4}{l} \right]}$$

is equal for both, the model and the construction. Since this condition is not satisfied, there is no similarity between the mockup and the construction, which has an influence only upon the bearing capacity. The bearing capacity of the prototype is:

$$P_{rp} = \alpha \cdot \lambda^2 \cdot P_{rm} \cdot \frac{\eta_p}{\eta_m}$$

Card 8/ 11

✓

80416

RUM/8-59-1-9/24

Study of the Behavior of Constructions by Experimenting With Mockups From Plastic Materials

representing the influence of the axial loads upon the bearing capacity of the frame. The η coefficient is 0.98 - 0.99 for the prototype and 0.85 - 0.95 for the mockup. In case of a metal prototype with $\lambda = 50$, $E = 2,100,000$ and $\sigma_c = 2,400$, and a mockup of "SDP-1" with $\sigma_c = 550$ kg/sq cm, $E_m = 36,000$ kg/sq cm, the following result is being obtained:

$$\frac{\eta_p}{\eta_m} = 1.12.$$

The experiment supplies the appearance points of the plastic joint, their order and the bearing capacity. Another experimental frame [Ref 5] is shown by Figure 8. Two mockups have been made, the one from "SDP-2" and the other from "SDP-3". The results are shown by the table on page 162. A series of experiments have been conducted with photoelasticity. Photoelastic mockups are made from "Dinox F-110", an optical active epoxy resin produced in Rumania [Ref 6]. The behavior of a girder with rectangular holes made of "SDP-1" and of "Dinox F-110" has been studied simultaneously. The authors have examined: a) the bearing capacity; b) the influence of the concentration of tension in the hole corners upon the bearing capacity; c) the regions of entrance into the

Card 9/11

4

80416

RUM/8-59-1-9/24

Study of the Behavior of Constructions by Experimenting With Mockups From Plastic Materials

plastic zone; d) the coincidence of these regions with the maximum stress, resulting from the photoelastic mockup. Mockup Nr 1 (Figure 10) has $\frac{L_0}{H} > 5$, thickness 6.5 mm, square-shaped holes with the side $\frac{H}{3}$, dimension of solid section $\frac{H}{3} \times 6.5$ mm. Mockup Nr 2 (Figure 11) had $\frac{L_0}{H} > 5$, thickness 6.5 mm, rectangular holes with $\frac{H}{2}$ base and $\frac{H}{3}$ height, dimension of solid section $\frac{H}{3} \times 6.5$ mm. The experimentation with mockup Nr 1 has proved that the loss of the bearing capacity of the bar was due to the unitary forces of tension in the lower section, in the region of the two central solid sections. Figure 12 shows the distribution of the tension in the elastic field. Accomplishing the calculations, $P = 112$ kg, at which the plastification has appeared, thus resulting for the "SDP-1" mockup: $\sigma = 530$ kg/sq cm. The calculation of the unitary tension force has been accomplished by considering the value of the material band: $\tau_{0.1} = 5.25$ kg/sq cm/cm. The thickness of the mockup from "Dinox-110" was 5.5 mm and the power by which the isochromatic table has been established was $P = 18.7$ kg. The maximum tension has appeared not in the mainly stressed middle section but in the solid section. The experiment with mockup Nr 2 has proved that the loss of the bearing capacity was due to the shearing of the solid section (see Figure 11). Regarding the bearing capacity, the loss has been produced at

Card 10/11

80416

RUM/8-59-1-9/24

Study of the Behavior of Constructions by Experimenting With Mockups From Plastic Materials

the mockup Nr 1 at P = 125 kg and at mockup Nr 2 at P = 100 kg. Other experiments have been conducted with a curved bar exerted to horizontal symmetric forces (Figure 15) and a frame exerted to a horizontal force. Plastic materials allow a study of a wide range of problems, regarding the kind of loss of the bearing capacity. Chromoplasticity makes the direct detection of plastic deformation zones possible which cause the rupture. The experimental results have been checked by theoretical calculations and photo-elastical experimentations. Chromoplastic experiments are very simple and can be accomplished without special devices, except the load arrangement.

There are: 22 photographs, 2 diagrams, 2 graphs and 6 references, 5 of which are Rumanian and 1 Russian.

SUBMITTED: October 29, 1958

4

Card 11/11

Report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Aug - 3 Feb '60.

- 34. A. I. Prigogine (Brussels): Instabilities in nonequilibrium thermodynamics.
- 35. S. S. Gurevich (Moscow): On the solution of the dynamic stability problem for a half-space under conditions of axial symmetry.
- 36. A. I. Prigogine (Brussels): Instabilities in nonequilibrium thermodynamics.
- 37. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 38. A. I. Prigogine (Brussels): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 39. A. I. Prigogine (Brussels): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 40. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 41. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 42. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 43. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 44. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 45. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 46. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 47. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 48. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 49. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 50. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 51. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 52. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 53. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 54. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 55. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 56. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 57. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 58. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 59. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.
- 60. S. S. Gurevich (Moscow): On the essential non-linearity of certain problems in nonequilibrium thermodynamics.

BALAN, St.; PETKU, V. [Petcu, V.]; REUTU, S. (Bukharest)

Studying the behavior of Vierendeel beams in the elasto-plastic range
using chromoplastic models. Stroi. mekh. i rasch. soor. 2 no.2:19-
22 '60. (MIRA 14:5)

(Girders--Models) (Plastics)

BAIAN, Stefan

Teaching of theoretical mechanics in the institutions of higher technical education. Studii cerc meo apl 11 no.6:1361-1368 '60.

1. Membru corespondent al Academiei R.P.R.

S/169/62/000/010/028/071
D228/D307

AUTHORS: Dălan, Stefan, Belc, Aurei and Ifrim, Mihail

TITLE: Tests on the seismic platform of some models of buildings

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 10, 1962, 30, abstract 10A194 (Studii și cercări astron. și seismol., 6, no. 2, 1961, 315-324 (Rom.; summaries in Rus. and Fr.))

TEXT: The results of tests, carried out on a seismic platform over several models of stone buildings, are given together with information about the behavior of the stone buildings under the influence of earthquakes. Photographs show the set-up and the behavior of the models while being influenced by different forces.
[Abstracter's note: Complete translation]

Card 1/1

BALAN, Stefan; RAUTU, Sandu; PETCU, Valeriu

Breaking points for statically indeterminate beams of variable cross section. Studii cerc mec apl 12 no.5:949-958 '61.

1. Membru corespondent al Academiei R.P.R. (for Balan). 2. Institutul de constructii, Bucuresti (for Rautu). 3. Institutul de cercetari in constructii si economia constructiilor (INCERC), Bucuresti (for Petcu).

OPREA, C.V.; BALAN, S.

Phenomena of soil sliding destruction in the upper basin of the
Timis and the measures to prevent and fight against them. Studii
agr Timisoara 10 no.1:9-23 Ja-Je '63.

BALAN, S.

Soil of the upper basin of the Timis. Studii agr Timisoara 10
no.1:25-47 Jan-Je '63.

OPREA, C. V.; BALAN, S.; PRELIPCEANU, Oltea

Humid phreatic soils in the Banat Plain and their
agricultural value. Studii agr Timisoara 10 no. 2:
215-240 J1-D '63.

KONDI, V.; JACOBESCU, A.; MITRICA, N.; BALAN, St.

Plasma defibrination through heat. Rumanian M. Rev. 1 no.3:11-13
July-Sept 57.

1. The Centre for Haematology and Transfusion, Bucharest.

(BLOOD PRESERVED

plasma defibrination by heat)

(HEAT, eff.

defibrination of plasma for storage)

COUNTRY : Rumania T
CATEGORY : Human and Animal Physiology, Blood
ABS. JOUR. : RZhBiol., No. 5 1959, No. 21989
AUTHOR : Popescu, Em.; Balan, St.
INST. : --
TITLE : Plasma Transfusions in Experimental Immunologic Hemolytic Anemia.
ORIG. PUB. : Fiziol. norm si patol., 1958, 5, No. 3, 229--234
ABSTRACT : In experiments conducted on immunized rabbits and guinea pigs, the intravenous transfusion of plasma from animals of the same species increased the severity of the shock and the mortality and caused a rise in the titer of antiserum precipitins in the animals injected with the heterogenous serum. Following the plasma transfusion the intensity of hemolysis in the guinea pigs with immunologic hemolytic anemia diminished. Inasmuch as the plasma transfusion raised the antibody titer, it is thought that the antihemolytic effect of plasma
1/2 T-42
Card:

KONDI, V.; IACOBESCU, A.; NITRICA, Natalia; BAIAN, St.

Plasma defibrination by heat. Med. int., Bucur. 10 no.1:117-120 Jan 58.

(PLASMA, preparation of
defibrination by heat)

(FIBRIN
plasma defibrination by heat)

KONDI, V., dr.; si chimisti: IACOBESCU, A.; BALAN, St.; MITRICA, N.

Preparation of an anti-human serum with great precipitating power and specificity. Med. int., Bucur. 11 no. 11:1751-1753 N '59.

1. Centrul de hematologie, Bucuresti.
(IMMUNE SERUMS)

KONDI, V.; IACOBESCU, A.; BAIAN, St.; FODOR, O.; NITRICA, Natalia.

An anticoagulant inhibiting thromboplastin formation .

Rumanian M. Rev. 4 no.1:37-39 Ja-Mr '60.

(THROMBOPLASTIN)

(ANTICOAGULANTS pharmacol.)

KONDI, V., dr.; IACOBESCU, A., dr.; BALAN, St., dr.; MANICATIDE, E.T., dr.

Congenital hypoproconvertinemia. Med. intern., Bucur 12 no.12:
1913-1917 D '60.

(BLOOD COAGULATION)

KONDI, V., dr.; IACONESCU, A., dr.; BALAN, St., dr.

Considerations on the reticulocyte test in the verification of
feto-maternal incompatibility. Med. inter., Bucur 13 no.3:471-474
Mr '61.

~~(RETICULOCYTES)~~ (RH FACTORS)

PASCU, T., dr.; BALAN, St. S., dr.; STANCIULESCU, P., dr.

Some unusual aspects of polyserositis. Med. intern. 3:347-354 Mr '62.

1. Lucrare efectuata in Clinica medicala a Spitalului "Brincovenesc",
director, prof. R. Brauner.

(PERIODIC DISEASE case reports) (SEROSITIS diagnosis)

KONDI, V., dr.; GRIGORIU, Gh., dr.; IACOBESCU, A., dr.; BALAN, St., dr.;
PRETORIAN, M., dr.; MITRICA, N., chim.

The immunochemical study of macroglobulinemias in connection with
a case of Waldenström's disease. Med. intern. 14 no.10:1225-1235 0 '62.

1. Lucrare efectuata la Centrul de hematologie, Bucuresti.
(MACROGLOBULINEMIA) (IMMUNOELECTROPHORESIS) (MULTIPLE MYELOMA)
(DIAGNOSIS, DIFFERENTIAL)

RUMANIA

BALAN, Șt., Dr.

Institute of Hematology (Institutul de hematologie),
Bucharest. Originally presented 30 Mar 63 at a meeting
of the Clinical Laboratory Section of the Bucharest
Branch of the U.S.S.M.

Bucharest, Viata Medicala, No 12, 15 Jun 63, pp 809-818

"The Thrombocyte (Exploration of the Thrombocytic Function)"

(1)

KONDI, V., dr.; MITRICA, Natalia, chim.; IACOBESCU, A., chim.; BALAN, St., dr.

Glucose-6-phosphate dehydrogenase deficiency. Med. intern. (Bucur.)
16 no.8:899-906 Ag '64.

BALAN, V.

BALAN, V. Construction of wineries of wine-producing centers p.2.

Vol. 7 no. 289, July 1955
CONSTRUCTORUL
Bucuresti, Rumania

So: Eastern European Accession Vol. 5 No. 4 April 1956

BALAN, V.

RUMBLE/Chemical Products and Their Application.
Photographic Materials.

H-20

Abs Jour: Ref Zhur-Khin., No 2, 1959, 5923.

Author : Balan, Virgil.

Inst :

Title : Characteristics of Phototechnical Films.

Orig Pub: Tehn. grafica, 1957, No 5, 14-16.

Abstract: The basic sensitometric characteristics of photographic materials - the characteristic curve, general sensitivity, gradation, contrast range, fog, special sensitivity - are discussed, and a table enumerating the brands of phototechnical films, their characteristics and kind of work, for which they are intended, is presented. - K. Mandshilevich.

Card : 1/1

BALAN, V.

A unique formula for the preparation of glue solution necessary for the manufacture of matches; quantity of glue and water determined in relation to the viscosity of glue and the best range of temperature for the preparation of the glue solution necessary for the manufacture of matches. p. 467.

INDUSTRIA LEMNULUI. (Asociatia Stiintifica a Inginerilor si Technicienilor din Romania si Ministerul Industriei Lemnului) Bucuresti, Rumania.
Vol. 7, No. 12, Dec. 1958

Monthly List of East European Accessions (EEAI) LC, Vol. 8, No. 6, June 1959.
UNCL

BALAN, V.

Characteristics of wood for the manufacture of matches. p. 136.

INDUSTRIA LEMNULUI (Asociatia Stiintifica a Inginerilor si Tehnicienilor din Romania si Ministerul Industriei Lemnului) Bucuresti, Rumania. Vol. 8, no. 4, Apr. 1959.

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

Uncl.

BALAN, V.

Production of high quality matches by replacing zinc oxide with micro-asbestos in the inflammable paste. p.219.

INDUSTRIA LUMINOASA. (Asociatia Stiintifica a Inginerilor si Tehnicienilor din Romania si Ministerul Industrial Romaniei)
Bucuresti, Romania
Vol. 8, no. 6, June 1959.

Monthly list of Eastern European Accession Index (EEAI) IC vol. 8, No. 11
November 1959
Uncl.

SOLACOLU, S.; DINESCU, R.; SINGER, G.; BALAN, V.

Viscosity of coal slags, effect of certain factors. Rev electro-
teehn energet 9 no.1:123-131 '64

1. Corresponding Member of the Rumanian Academy (for (Solacolu)

BALANCHIVADZE, I. (Tbilisi)

Differential land rent in the U.S.S.R. Vop. ekon. no.8:104-111
Ag '61. (MIRA 14:7)
(Rent (Economic theory))

KODANASHVILI, Vakhtang Aleksandrovich; BALANCHIVADZE, Georgiy
Ilarionovich

[Basic processes and equipment of chemical technology]
[Osnovnye protsessy i apparaty khimicheskoi tekhnologii.
Tbilisi, Gos.izd-vo "TSodna"]1963. 479 p. [In Georgian.]
(MIRA 17:4)

IVANOV, K.A.; KODANASHVILI, V.A.; BALANCHIVADZE, G.I.; ANANIASHVILI,
S.D.; TOTIASHVILI, N.G.

Production of ammonium sulfate from acid asphalt. Trudy GPI
[Gruz.] no.5:101-106 '62. (MIRA 17:10)

BALANCHIVADZE, Sh.E.

Trees and shrubs of the southern hemisphere on the Black Sea coast of Adsharia. *Biul.Glav.bot.sada. no.58:14-21 '65.* (MIRA 18:12)

1. Botanicheskiy sad AN Gruzinskoy SSR, Batumi.

BALANCHIVADZE, V.P.; MEL'NIKOV, V.S.

Output of conifer lumber in accordance with the new All-Union State
Standard. Der. prom. 12 no.11:7-9 N '63. (MIRA 17:1)

BALANCHUK, D.D.

Dynamics of Widal's reaction titer in patients with typhoid fever treated with synthomycin. Zhur. mikrobiol. epid. i immun 28 no.2:134 P '57 (MLRA 10:4)

1. Iz kliniki infektsionnykh bolezney I Moskovskogo meditsinskogo instituta.

(CHLOROMYCETIN) (TYPHOID FEVER)

BALAN, V.

How we Romanians work for the generalization of a good experience in production. Munca sindic 6 no.10:5-10 0 '62.

1. Presedinte al Consiliului regional al sindicatelor, Hunedoara.

FA 7/19/74

HERB/Medicine - Antibiotics May/Jan 48
Medicine - Tubercle Bacilli

"The Antibiotic Action of the Juices of Garlic and Other Plants on Tubercle Bacilli," I. D. Balanchuk, Bacteriol Dept, Ukrainian Tuberculosis Inst, 3 pp

"Problems Tuberkuloza" No 3

Relative fractions of garlic, onion, and radish have no effect on the growth of tubercle bacilli. Juice of onion, radish, and lemon have almost no effect on growth of tubercle bacilli. Garlic juice diluted up to 1:5000 in vitro manifests bactericidal action on

7/19/74

HERB/Medicine - Antibiotics (Contd) May/Jan 48

Human and bovine tubercular cultures. This property is not destroyed by boiling or prolonged exposure to the air.

7/19/74

TSEYDLER, S.A.;BALANCHUK, L.D.;KARAK, Ye.M.

Clinical aspects and diagnosis of recurrent typhus. Klin. med.,
Moskva 30 no.2:76 Feb 1952. (OIML 22:1)

1. Of the Clinic of Infectious Diseases. (Director--- Prof. Z. Ye.
Shtaynshnyder), First Moscow Order of Lenin Medical Institute.

TRANS W-23058, 18 JUN 52

BALACHUK, L.D.

Prowazek's accelerated agglutination reaction of Rickettsia by serum and lysed blood in typhus. Zhur.mikrobiol.epid.i immun. no.8:81-84 Ag '53.
(MLRA 6:11)

1. Klinika infektsionnykh bolezney I Moskovskogo ordena Lenina meditsinskogo instituta na base Moskovskoy klinicheskoy infektsionnoy bol'nitsy.
(Typhus fever)

BALANCHUK, L.D.; TSEYDLER, S.A.; SOKOLOVA, I.S.; ZALESKVER, N.G., glavnyy vrach.

Role of the Rickettsia agglutination reaction in the diagnosis of initial and recurrent typhus; author's abstract. Zhur.mikrobiol.epid.i immn. no.9: 7-8 S '53. (MLRA 6:11)

1. Klinika infektsionnykh bolezney I Moskovskogo ordena Lenina meditsinskogo instituta na base Krasnosovetskoy bol'nitsy. (Typhus fever)

BULKINA, I.G.; BALANCHUK, L.D.; POKROVSKIY, V.I.

Comparative evaluation of bacteriologic investigations of the blood and of the sternal punctate in typhoid fever following synthomycin therapy. Terap. arkh. 27 no.6:37-41 '55. (MIRA 9:2)

1. Iz kliniki infeksionnykh bolezney (dir. doktor meditsinskikh nauk K.V. Bunin) i Moskovskogo ordena Lenina meditsinskogo instituta.

(TYPHOID FEVER, therapy,
chloramphenicol, eff. on blood & bone marrow, bacteriol.)

(CHLORAMPHENICOL, therapeutic use,
typhoid fever, eff. on blood & bone marrow bacteriol.)

(BLOOD, bacteriology,
in typhoid fever after chloramphenicol ther.)

BUNIN, K.V.; BALANCHUK, L.D.

Use of the hapten precipitation test in diagnosing the carrying of typhoid germs. Zhur.mikrobiol.epid. i immun..supplement for 1956:39-40 '57 (MIRA 11:3)

1. Iz kliniki infeksionnykh bolezney I Moskovskogo ordena Lenina meditsinskogo instituta.
(KBERTHELLA TYPHOSA)

BALANCHUK, V.K. (Novosibirsk, ul. Rimskogo-Korsakova, 4, kv. 23)

Histology and histochemistry of the connective tissue framework
of the visceral flap of the yolk sac of rodents. Arkh. anat. hist.
i embr. 40 no. 5: 82-84, May '61. (MIRA 15:4)

1. Kafedra gistologii i embriologii (zav. - prof. M. Ya. Subbotin)
Novosibirskogo meditsinskogo instituta.
(CONNECTIVE TISSUES) (FETAL MEMBRANES)

YUR'YEVA, Ye.M.; LEYTAN, V.I.; BALANCHUK, V.K.

Biochemical and histochemical research on placental proteins in
late pregnancy toxemias. Akush. i gin. 40 no.5:57-61 S-0 '64.
(MIRA 18:5)

1. Kafedra gistologii i embriologii (zav. - prof. M.Ya.Subbotin)
Novosibirskogo meditsinskogo instituta.

POLAND

BALANDA, Andrzej

Institute of Physics, Jagiellonian Univ.
(Instytut Fizyki Uniwersytetu Jagiellonskiego",
Crakow

Crakow, Postepy fizyki, No 3, May-June 1965, pp
247-256

"Methods for measuring the shortest periods of
life of atomic nuclei in an excited state."

BALANDA, D. V.

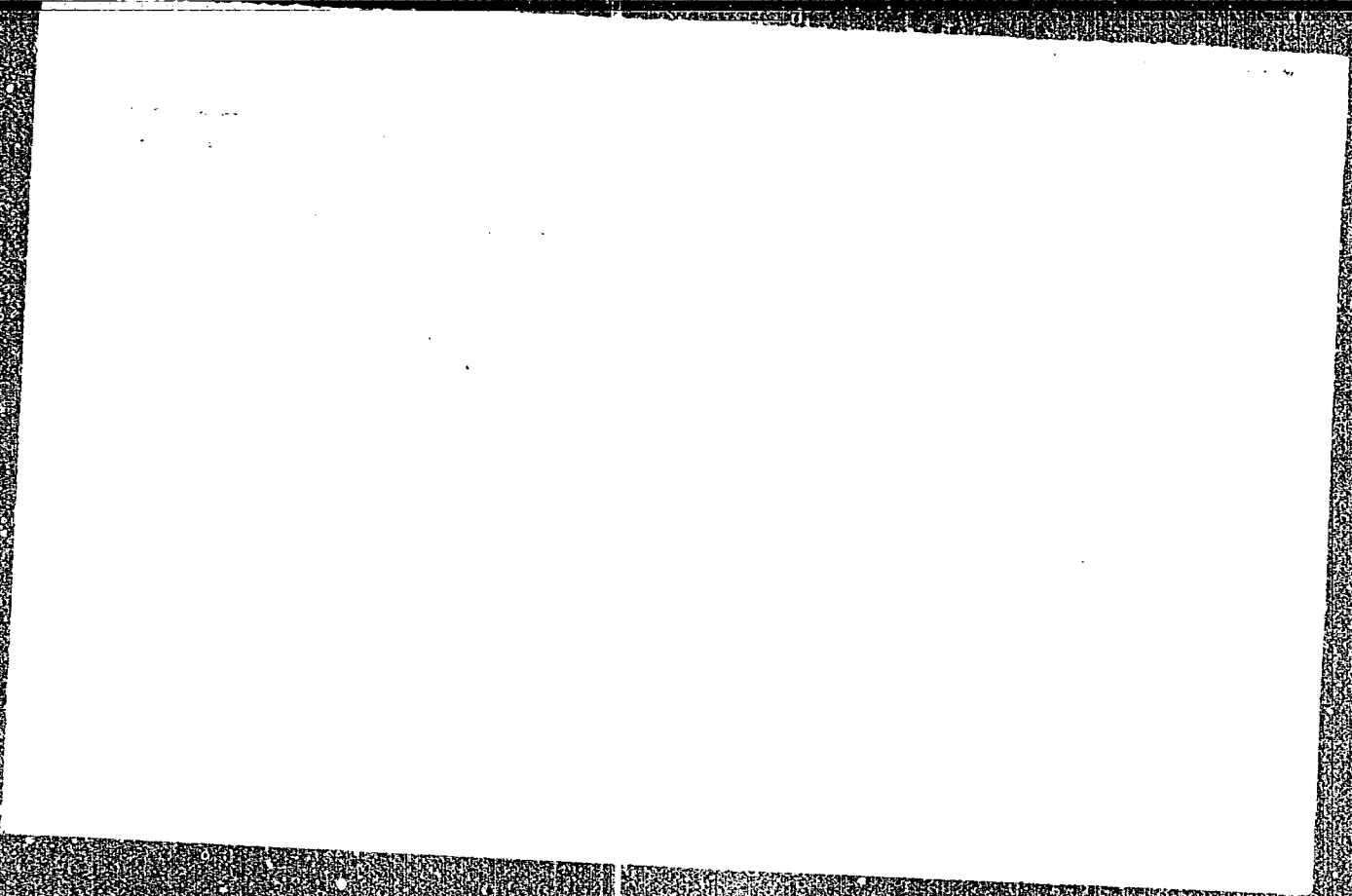
"Scientific Cultivation of Tobacco in the Krasnodar Region," Krasnodar Gos.
isd-vo, 1950

1957
CATEGORY : Calculated Points. General Problems.
ISS. JOUR : S. kh. Sev. Kavkaza, No. 8, 1958, No. 33-37
AUTHOR : Balanda, D.V.
INST. :
TITLE : The Problem of an Agricultural System in the
Foothill Zone /in Kazakhstan/
ORIG. PUB.: S. kh. Sev. Kavkaza, 1958, No.8, 33-37
ABSTRACT : No abstract

CARD: 1/1

"APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103



APPROVED FOR RELEASE: Wednesday, June 21, 2000

CIA-RDP86-00513R000103

Card 2/3



11.5600

5.4700

AUTHORS:

Balandin, A. A., Klabunovskiy, Yu. I.,
Oberemok-Yakubova, A. P., Brusov, I. I.

81552
S/062/60/000/05/01/00
B004/B066

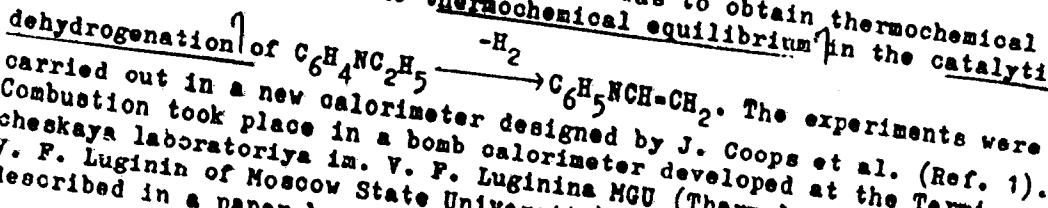
TITLE:

Thermochemical Determination of Combustion Heats of
2-Ethyl Pyridine and 2-vinyl Pyridine

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh
nauk, 1960, No. 5, pp. 784-786

TEXT: The purpose of the present paper was to obtain thermochemical data
for the calculation of the thermochemical equilibrium in the catalytic



Combustion took place in a bomb calorimeter developed at the Termi-
cheskaya laboratoriya im. V. F. Luginina MGU (Thermal Laboratory imeni
V. F. Luginin of Moscow State University). The measuring technique is
described in a paper by S. M. Skuratov et al. (Ref. 3). The calorific

Card 1/3

Thermochemical Determination of Combustion
Heats of 2-Ethyl Pyridine and 2-Vinyl Pyridine

21552

S/062/60/000/05/01/008
B004/B066

value of the calorimeter system was determined with an accuracy of 0.02 .. 0.03 per cent by means of benzoic acid supplied by Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleeva (All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleev). Because of the easy polymerizability of 2-vinyl pyridine, the substances investigated were prepared immediately before combustion, distilled, and filled into ampuls. Special attention was paid to the purity of the substances. 2-ethyl pyridine was obtained by hydrogenation of 2-vinyl pyridine, which resulted from condensation of α -picoline with paraformaldehyde and from dehydration of the resultant alcohol on alkali. The physical data of both substances are compared in Table 1 with data available in publications. When calculating the combustion heat (at 25°C), all corrections necessary were considered (Regnault-Pfaundler-Usov formula; correction according to E. W. Washburn, Ref. 14). Table 2 gives the following data for the two substances: heat of combustion, change $\Delta H_{25}^{\text{liquid}}$ of enthalpy on combustion with molecular oxygen at 1 atm to form CO_2 , H_2O , and N_2 . The formation heat of ethyl pyridine was found to be 0.69 kcal/mole and that of 2-vinyl pyridine

Card 2/3

Thermochemical Determination of Combustion
Heats of 2-Ethyl Pyridine and 2-Vinyl Pyridine

81552

S/062/60/000/05/01/000
B004/B066

to be 75.05 kcal/mole. [Abstracter's note: This value given in the original
for ethyl pyridine is certainly a misprint.] There are 2 tables and
16 references: 4 Soviet, 1 Dutch, 1 German, and 10 American. X

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N. D.
Zelinskiy of the Academy of Sciences, USSR)

SUBMITTED: October 20, 1958

Card 3/3

RUDENKO, A.P.; BALANDIN, A.A.; KACHAN, S.Ya.

Two mechanisms of carbon formation in the course of the decomposition on silica gel, of n-paraffins, naphthenes, and aromatic hydrocarbons having six and seven carbon atoms.
Izv.AN SSSR.Otd.khim.nauk no.6:981-988 J1 '60.
(MIRA 13:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Paraffins) (Naphthenes) (Pyrolysis)

S/062/60/000/008/014/033/XX
B013/B055

AUTHORS: Tolstopyatova, A. A., Balandin, A. A., and Matyushenko, V. Kh.

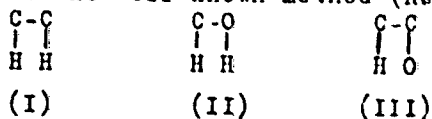
TITLE: Determination of the Bonding Energies of the Atoms of Organic Molecules Reacting With the MnO Catalyst Surface

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 8, pp. 1333-1336

TEXT: The present paper is a continuation of the investigation into the transformation of alcohols on manganous oxide begun in Refs. 1 and 2. The experimental methods and catalyst preparation have been described previously (Ref. 2). Dehydration was carried out between 330° and 380°C. The gaseous products consisted of unsaturated hydrocarbons only. The first series of experiments was performed to determine the apparent activation energy (Table 1, Fig. 1). The activation energy calculated by means of the Arrhenius equation from the relation $\log m = f(1/T)$ was 24.1 kcal/mol. Relative adsorption coefficients of isobutylene (Table 2) and water (Table 3) were determined. The determination of the relative adsorption coefficient 1/3

Determination of the Bonding Energies of the S/062/60/000/008/014/033/XX
 Atoms of Organic Molecules Reacting With the B013/B055
 MnO Catalyst Surface

rients and their temperature dependence permitted calculation by the method described in Ref. 5 of the changes in free energy, enthalpy and entropy produced by displacement of trimethylcarbinol from the active centers of the catalyst by isobutylene and water (Table 4). The true activation energy for the dehydration of trimethylcarbinol, calculated from the relation $\log k = f(1/T)$ ($E = 31.0$ kcal/mol) was found to be 6.9 kcal higher than the apparent activation energy ($E' = 24.1$ kcal/mol). On the strength of this investigation, the authors were able to determine the bonding energies of the atoms reacting with the catalyst surface according to the well-known method (Ref. 6). These reactions are:



(I) dehydrogenation of hydrocarbons; (II) dehydrogenation of alcohols; (III) dehydration of alcohols. The following bonding energies were found:
 $Q_{\text{H-k}} = 50.75$, $Q_{\text{C-k}} = 26.7$ and $Q_{\text{O-k}} = 38.8$. V. N. Kondrat'yev is mentioned.

Card 2/3

Determination of the Bonding Energies of the S/062/60/000/008/014/033/XX
Atoms of Organic Molecules Reacting With the B013/B055
MnO Catalyst Surface

There are 1 figure, 4 tables, and 8 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova ✓
(Moscow State University imeni M. V. Lomonosov).
Institut organicheskoy khimii im. N. D. Zelinskogo Akademii
nauk SSSR (Institute of Organic Chemistry imeni N. D.
Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: January 14, 1959

Card 3/3

VASYUNINA, N.A.; BALANDIN, A.A.; CHEPIGO, S.V.; BARYSHEVA, G.S.

Catalytic hydrogenation of wood and other plant materials. Izv.
AN SSSR Otd.khim.nauk no.8:1522-1523 Ag '60. (MIRA 15:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR i
Gosudarstvennyy nauchno-issledovatel'skiy institut gidroliznoy
promyshlennosti.
(Wood--Chemistry) (Hydrogenation)

BALANDIN, A.A.

Structural and energetic factors in the elementary stages of
catalysis. Probl. kin. i kat. 10:314-328 '60. (MIRA 14:5)

1. Institut organicheskoy khimii AN SSSR.
(Catalysis)

87667

5.1190

2209, 1274 only

S/081/60/000/023/003/021
A005/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 23, p. 67, # 91656

AUTHORS: Balandin, A.A., Teteni, P.

TITLE: On the Problem of the Role of d-Electrons in the Catalysis. The Kinetics of Dehydrogenation of Isopropyl Alcohol in the Presence of Copper, Cobalt, Nickel, Iron, Silver, Platinum, and Palladium

PERIODICAL: Probl. kinetiki i kataliza, 1960, Vol. 10, pp. 339 - 343

TEXT: The values were determined of the actual activation energies and the specific constants of dehydrogenation rate of isopropyl alcohol with Cu, Ni, Co, Fe, Ag and Pt as catalysts. The temperature coefficient of the dehydrogenation rate of isopropyl alcohol over Pd was determined. It is shown that there is no direct relation, at the dehydrogenation of isopropyl alcohol between the catalytic activity of the metal and the incompleteness of its d-level. However a relation exists between the catalytic activity and the atomic radius of the metals crystallizing in the facecentered cubic crystal lattice. X

R.A.

Translator's note: This is the full translation of the original Russian abstract.
Card 1/1

KIPERMAN, S.L.; BALANDIN, A.A.

Energies of the bonds between nickel, iron, platinum, and palladium catalysts and the atoms of elements in organic compounds. Probl. kin. i kat. 10:344-350 '60. (MIRA 14:5)

1. Institut organicheskoy khimii AN SSSR.
(Chemical bonds) (Catalysts)

s/081/60/000/021/005/018
A005/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 21, p. 50, # 83983

AUTHORS: Tolstopyatova, A. A., Balandin, A. A.

TITLE: The Determination of the Energy of Bonding With Oxide Catalysts by
the Kinetic Method for Developing a Theory of Catalyst Selection

PERIODICAL: Probl. kinetiki i kataliza, 1960, Vol. 10, pp. 351-355 ✓

TEXT: The authors determined by the kinetic method the bonding energies of hydrogen, carbon, and oxygen with various oxides and show that, in accordance with the theory, the molecular structure, the catalyst's nature, and the mode of the catalyst's preparation affect the values mentioned.

Summary of the authors

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

VASSERBERG, V.E.; BALANDIN, A.A.

Elementary stages of the dehydration of alcohols on Al_2O_3 catalysts.
Probl. kin. i kat. 10:356-362 '60. (MIRA 14:5)

1. Institut organicheskoy khimii AN SSSR.
(Alumina) (Dehydration (Chemistry))
(Alcohols)

BALANDIN, A.A.; SOKOLOVA, N.P.

Catalytic properties of sodium-tungsten bronzes, which are defective structures. Probl. kin. i kat. 10:363-368 '60.

(MIRA 14:5)

1. Institut organicheskoy khimii AN SSSR.
(Bronzes) (Catalysts)

S/062/60/000/010/019/031/XX
B002/B060

AUTHORS: Balandin, A. A., Ferapontov, V. A., and Tolstopyatova, A.A.

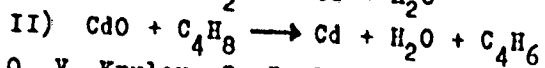
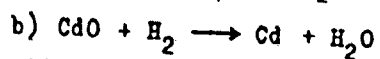
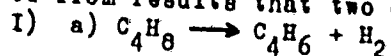
TITLE: Ability of Cadmium Oxide to Dehydrogenate Hydrocarbons by Catalysis

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 10, pp. 1751-1758

TEXT: The authors based on experimental work made on the dehydrogenation and dehydration of alcohols by means of oxides to make a theoretical study of the ability of beryllium oxide, magnesium oxide, zinc oxide, and cadmium oxide to dehydrogenate hydrocarbons. For this purpose, the activation energy was calculated on the basis of the multiplet theory (Table 1). The average value found for the adsorption potential of hydrocarbon dehydrogenation was 51.3 for beryllium oxide, 70.7 for magnesium oxide, 116.2 for zinc oxide, and 132.3 kcal/mole for cadmium oxide. The catalytic properties of cadmium oxide were studied experimentally. Cadmium oxide was synthesized by precipitating a cadmium nitrate solution with ammonia, and causing hydroxide to glow at 500°C in air free from CO₂, and was examined by X-rays. Dehydrogenation of cyclohexane was studied between 458° and 540°C (Table 3).
Card 1/2

Ability of Cadmium Oxide to Dehydrogenate
Hydrocarbons by CatalysisS/062/60/000/010/019/031/XX
B002/B060

The reaction starts at 487°C; at 522°C the catalyst is completely reduced, and dehydrogenation stops. Dehydrogenation of cyclohexene to benzene takes place between 470° and 520°C (Table 3 B). No cyclohexadiene is formed in this connection. Conversion of butylene to butadiene in nitrogen atmosphere takes place between 575° and 605°C (Table 4). The degree of conversion was 5.6% at most. Conversion of piperidine to pyridine was examined between 465° and 520°C (Table 5), and is believed to take place over piperidine. Methane does not reduce cadmium oxide between 500° and 595°C. It was concluded from results that two different types of reactions take place:



O. V. Krylov, S. Z. Roginskiy, and Ye. A. Fokina are mentioned. There are 1 figure, 5 tables, and 26 references: 24 Soviet, 1 US, and 1 British.

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)
June 15, 1959

SUBMITTED:
Card 2/2

S/062/60/000/011/003/016
B013/B078

AUTHORS: Stegner, G., Pudenko, A. P., Balandin, A. A.

TITLE: Carbon Formation in the Decomposition of Isopropyl Alcohol, n-Hexyl Alcohol, and Cyclohexanol on the Copper - Silica Gel Catalyst

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 11, pp. 1930 - 1937

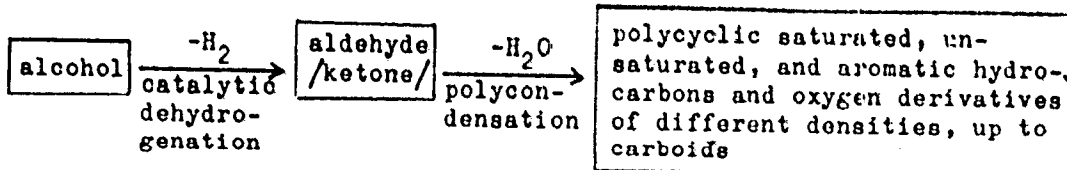
TEXT: A study has been made of the mechanisms of carbon formation in the decomposition of isopropyl and n-hexyl alcohols, as well as of cyclohexanol in the temperature range of 200 - 950°C, proceeding in the same manner as with ethyl alcohol (Refs.1,2). The experiments were conducted in a continuous system for heterogeneous catalytic studies at atmospheric pressure and a volume velocity of 2.25 h⁻¹. Fig.1 shows the temperature dependence of the carbon formation rate in the decomposition of the above-mentioned substances. The presence of three mechanisms can be inferred from the course of the curves. Diagrams are suggested for the three mechanisms: the low-temperature mechanism in the temperature

Card 1/5

Carbon Formation in the Decomposition of
Isopropyl Alcohol, n-Hexyl Alcohol, and
Cyclohexanol on the Copper - Silica Gel Catalyst

S/062/60/000/011/003/016
B013/B078

range of 200° - 600°C acts, like a pure polycondensation of aldehydes and ketones, according to the following scheme:



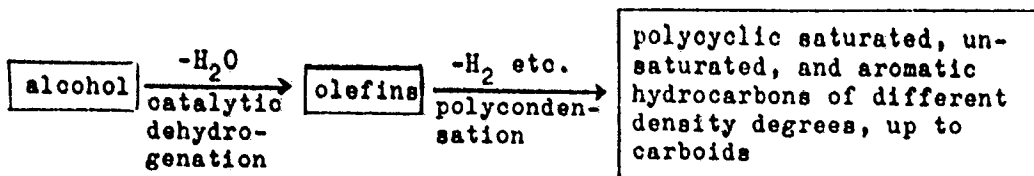
This scheme is applicable to all alcohols concerned, including ethyl alcohol. The intermediate mechanism in the temperature range of 600° - 750°C is a polycondensation of products of the catalytic dehydration of alcohols (propylene, hexylene, cyclohexene). Possibly, a polycondensation of ethylene takes place likewise under these conditions, but since the rate of this process is too low, it occurs only at higher temperatures, in the course of the high-temperature mechanism. The following scheme is offered for the intermediate mechanism:

Card 2/5

Carbon Formation in the Decomposition of
Isopropyl Alcohol, n-Hexyl Alcohol, and
Cyclohexanol on the Copper - Silica Gel Catalyst

S/062/60/000/011/003/016

B013/B078

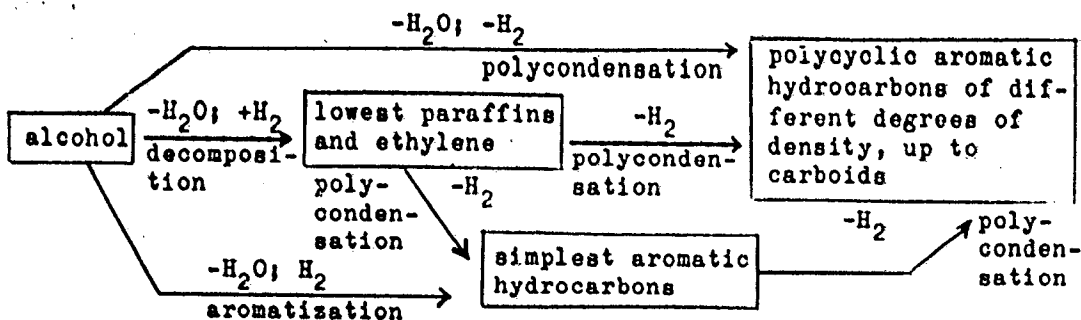


The replacement of the intermediate mechanism by the high-temperature mechanism manifests itself by a marked retardation of the process at temperatures above 750°C. In the range of 750° - 875° the carbon formation is slowed down, after which it is again speeded up vigorously beyond 875°C. This mechanism (750° - 950°C) comprises the following processes: polycondensation of decomposition products of the alcohols used (lowest paraffins and ethylene); polycondensation of aromatic hydrocarbons, resulting from the decomposition of alcohols; polycondensation of the alcohols used. A general scheme applies to them:

Card 3/5

Carbon Formation in the Decomposition of
 Isopropyl Alcohol, n-Hexyl Alcohol, and
 Cyclohexanol on the Copper - Silica Gel Catalyst

S/062/60/000/011/003/016
 B013/B078



As opposed to the two first-mentioned mechanisms, aromatic hydrocarbons only are given here as the end products. This is explained by the fact that under the conditions of the high-temperature mechanism the formation of saturated, unsaturated, and hydroaromatic polycyclic systems is practically impossible, which is indicated by the composition of

Card 4/5

Carbon Formation in the Decomposition of S/062/60/000/011/003/016
Isopropyl Alcohol, n-Hexyl Alcohol, and B013/B078
Cyclohexanol on the Copper - Silica Gel Catalyst

resinous polycondensation products. Their composition and aromatic character is almost the same in all of the alcohols investigated. Table 1 gives the composition of gaseous decomposition products of the alcohols on the copper - silica gel catalyst. The composition of the hydrocarbon part of the gaseous decomposition products of isopropyl and n-hexyl alcohols on the copper - silica gel catalyst is given in Table 2. There are 4 figures, 2 tables, and 4 references: 3 Soviet and 1 German. ✓

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova
(Moscow State University imeni M.V. Lomonosov)

SUBMITTED: June 29, 1959

Card 5/5

S/062/60/000/012/002/020
B013/B055

AUTHORS: ~~Balandin, A. A.~~ Tolstopyatova, A. A., Konenko, I. R.

TITLE: Investigation of Catalytic Transformations of Isopropyl Alcohol and Cyclic Hydrocarbons on Titanium Dioxide (Anatase) Using a Differential Thermocouple

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 12, pp. 2096-2102

TEXT: The authors of the present paper investigated the dehydrogenation and dehydration of isopropyl alcohol (Tables 1-4) and the dehydrogenation and irreversible catalysis of hydrocarbons, cyclohexane (Table 5), cyclohexene (Tables 6 and 7) and 1,4-cyclohexadiene (Table 8) - on a modification of titanium dioxide (anatase) using a differential thermocouple (Chromel - cupro nickel). The latter had 10 junctions each at both sides of the mica sheet to which it was attached. All the 20 junctions were on the one half of the sheet. The distribution of the catalyst in the quartz tube containing the thermocouple is shown in Fig. 1. A continuous reaction vessel was used for the kinetic experiments (Refs. 4 and 5). The temperature was maintained with
Card 1/3

Investigation of Catalytic Transformations of S/062/60/000/012/002/020
Isopropyl Alcohol and Cyclic Hydrocarbons B013/B055
on Titanium Dioxide (Anatase) Using a
Differential Thermocouple

an accuracy of $\pm 5^\circ$. The evolution rate and quantity of gaseous products were measured and recorded by a ГСП-10 (GSP-10) gas meter (Fig. 2). X-ray analysis of the catalyst prepared from titanium tetrachloride showed it to be anatase. The transformation of isopropyl alcohol on TiO_2 was accompanied by a marked change in thermal effect during the first 15-20 min (Table 1, Fig. 3a). The analysis of the gaseous products formed in the reaction showed that the alcohol is practically only dehydrogenated during the first 7-8 min. After this period dehydrogenation and dehydration take place simultaneously and after 15-20 min dehydration occurs alone. From a comparison of the thermocouple data with the analytical data of the reaction products and the degree of carbon deposition on the catalyst surface it can be seen that the rates of dehydrogenation and dehydration, and the carbon content of the surface run parallel. The change in selectivity at otherwise unchanged general activity of TiO_2 is probably due to the accumulation of carbon on the surface. Deposition of carbon on the surface of Cr_2O_3 (Fig. 3b), however, was found to have no effect on its activity and selectivity. Summarily, the

Card 2/3

Investigation of Catalytic Transformations of Isopropyl Alcohol and Cyclic Hydrocarbons on Titanium Dioxide (Anatase) Using a Differential Thermocouple S/C62/60/000/012/002/020
R013/R055

authors conclude that a gradual accumulation of carbon on the anatase surface almost entirely suppresses the dehydrogenation of the alcohol and promotes its dehydration, but does not affect the total activity of the catalyst. The catalyzed irreversible transformation of cyclohexene and cyclohexadiene is suppressed by the accumulation of carbon on TiO_2 , whereas the dehydrogenation of cyclohexene, cyclohexane, and cyclohexadiene is promoted by this process. There are 3 figures, 7 tables, and 12 Soviet references. ✓

ASSOCIATION: Institut organicheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR
(Institute of Organic Chemistry imeni N. D. Zelinskiy of the Academy of Sciences USSR)

SUBMITTED: June 26, 1959

Card 3/3

BALANDIN, A.A.

Molecular structure and reactivity in catalysis. Kin. i kat. 1
no.1:5-14 My-Je '60. (MIRA 13:8)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.
(Catalysis)

YREYDLIN, L.Kh.; BALANDIN, A.A.; ZHUKOVA, I.F.

Selective hydrogenation of butynediol to butenediol on a skeletal nickel catalyst. *Kin. i kat.* 1 no. 3:447-454
6-0 '60. (MIRA 13:11)

1. Institut organicheskoy khimii imeni N.D. Zelinskogo
AN SSSR.

(Butynediol) (Butenediol) (Hydrogenation)

5.4300

S/195/60/001/004/008/015
B017/B055

AUTHORS: Tolstopyatova, A. A., Balandin, A. A., Stahishevskiy, V.

TITLE: The Kinetics of Alcohol Dehydration on Tungsten Oxide and the Energy of Carbon, Hydrogen, and Oxygen Bonds With Catalysts

PERIODICAL: Kinetika i kataliz, 1960, Vol. 1, No. 4, pp. 558-565

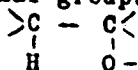
TEXT: The kinetics of the dehydration of ethyl, isopropyl, n-butyl and tert-butyl alcohol and cyclohexanol on W_2O_5 were investigated under isothermal conditions. This catalyst was also used to study the dehydrogenation of methyl alcohol and 1,2,3,4-tetrahydro naphthalene. The catalyst was prepared by subjecting the yellow tungsten oxide WO_3 to heat treatment in air at 350-450°C for 5-6h, and subsequent treatment with alcohol vapors at 200-390°C. Thermal effects in dehydration reactions of n-butyl alcohol are shown in Table 1. Table 2 gives the apparent activation energies of alcohol dehydration on the tungsten-oxide catalyst. A relation was found to exist between the apparent activation energy and
Card 1/4

X

88360

The Kinetics of Alcohol Dehydration on Tungsten Oxide and the Energy of Carbon, Hydrogen, and Oxygen Bonds With Catalysts S/195/60/001/004/008/015 B017/B055

the structure of the alcohol. For ethyl and n-butyl alcohol, the apparent activation energy of dehydration is 30 kcal/mole, for isopropyl alcohol, 24 kcal/mole and for tert-butyl alcohol, 18 kcal/mole. The true activation energies of alcohol dehydration (isopropyl and butyl alcohols) were determined at 26.1 kcal/mole for isopropyl alcohol and 33.4 kcal/mole for n-butyl alcohol by means of the kinetic equation by Balandin (Ref. 20). The relative adsorption coefficients of the dehydration products from n-C₄H₉OH and iso-C₄H₉OH as a function of temperature are given in Table 5. From this it may be seen that the relative adsorption coefficients are independent of temperature. Results obtained in the kinetic determination of the dehydration of n-butyl and isopropyl alcohol are shown in Table 5. The true activation energy is 3 kcal/mole higher than the apparent activation energy. The alcohols to be dehydrated are oriented with their functional groups towards the surface of the catalyst:



The kinetic method was used to determine the energies of the bonds of the
Card 2/4

00300

The Kinetics of Alcohol Dehydration on Tungsten Oxide and the Energy of Carbon, Hydrogen, and Oxygen Bonds With Catalysts S/195/60/001/004/008/015
BO17/BO55

carbon, hydrogen, and oxygen atoms with the active centers of the W_2O_5 surface. The bond energies were found to be a function of the structure of the alcohol. The energies of the bonds of reacting atoms and molecules with the surface of the W_2O_5 catalyst are given in Table 6.

Table 6

Alcohol	Activation Energy of Dehydration	Bond Energies		
		Q_{H-Cat}	Q_{C-Cat}	Q_{O-Cat}
n-Butyl	29.9	56.7	24.1	39.4
Ethyl	29.4	56.4	24.5	39.7
Isopropyl	23.7	52.6	27.6	43.5
Cyclohexanol	21.9	51.5	29.5	44.6
Tert-butyl	17.8	48.7	32.2	47.5

I. Ye. Adadurov and P. Ya. Krayniy are mentioned. There are 6 tables and 25 references: 24 Soviet and 1 German.

Card 3/4

33360
The Kinetics of Alcohol Dehydration on Tungsten S/195/60/001/004/008/015
Oxide and the Energy of Carbon, Hydrogen, and BG17/B055
Oxygen Bonds With Catalysts

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State
University)

SUBMITTED: May 13, 1960

Card 4/4

5.3700

800,000-010010

AUTHORS:

Balashov, A. A., Ivanov, A. D., Markovskii, G. P.,
Chernyshov, Ye. M., Bratov, L. I., Sidorovskii, S. I.,
Seyrovich, R. G., Tolstolozov, K. I.

TITLE:

Synthesis of Alkylaryl-Arenes, Silylenes and Their
Dehydrogenation

PERIODICAL:

Zhurnal obshchey khimii, 1960, Vol. 32, No. 1, pp. 87-
91 (USSR)

ABSTRACT:

Catalytic dehydrogenation of methylbenzene over a mixed
oxide catalyst (A) at 600-650° in the presence of steam,
yields dimethylbenzene and ethylbenzene necessary for prep-
aration of silanes. To the mixture (1-0 g) of ethyl-
styrene (40%), methylbenzene (30%), and methylbenzene
(30%), 1 ml of 0.1 N H₂PO₄ in isopropyl alcohol is
added with stirring, followed by addition of 150 g of
methylchlorosilane. The mixture was then slowly heated
to 60° for 2 hours. Distillation of the mixture produced
two fractions. The first fraction, methylphenyl-2-
methylchlorosilane, C₆H₅SiCl₂CH₂CH₃ (1),

Card 1/4

Synthesis of Aliphatic-Aromatic Silicones and
Their Dehydrogenation

SI, 70-70 1-10/70

bp 87.80° (1 mm), n_D^{20} 1.5160, and refractive index, n_D^{20} 1.5160, of the product fraction, di- β -(trimethylsilyloxy)ethyl-benzene, $CH_3(CH_2)_2Si(CH_3)_2OCH_2CH_2C_6H_5$ (II), bp 180-181° (1 mm), n_D^{20} 1.5220. Triethylsilyloxyethylbenzene, $(CH_3)_3SiOCH_2CH_2C_6H_5$ (III), bp 109-110° (1 mm), n_D^{20} 1.4985, was prepared from the corresponding Grignard reagent to which $(CH_3)_3SiCl$ (1.5 molar) was added in the course of 24 minutes. After precipitation, the mixture was heated for 4 hours and worked up as usual. Dehydrogenation of (I) over a nickel-silica catalyst (A) yields a mixture which on fractional distillation produces several fractions. One of them was a mixture of compound (I) and silicon-containing compounds (IV), $CH_3(CH_2)_2Si(CH_3)_2OCH_2CH_2C_6H_5$, bp 181-182° (1 mm), n_D^{20} 1.5161. The best yield of catalytic product over another catalyst (Ca-Al loaded) was 20% at 400°C, and it contained 20% of unreacted compound. Detailed description of

Card 2/4

Synthesis of Aliphatic-Aromatic Silanes and
Their Dehydrogenation

SOV/79-30-1-16/78

di- $[\beta$ -(methyldichlorosilyl)ethyl]-benzene (II) failed to produce a liquid product of catalysis. Dehydrogenation of trimethylsilylethylbenzene over the same catalyst at 550-560° yielded 87% of a product, n_D^{20} 1.4975. Chromatographic analysis of the obtained gas indicated that it contains 39.2% methane and 53.7% hydrogen. Distillation of catalyzate produced three fractions: first, bp 28-68° (25 mm), n_D^{20} 1.4855; second, 69-100° (25 mm), n_D^{20} 1.5003; third, bp 102-106° (25 mm), n_D^{20} 1.4995. Distillation of the catalysis product and analysis of the obtained gas indicate that along with dehydrogenation a decomposition of (III) to by-products takes place. The experiments with compound (III) are being continued. Dehydrogenation of trichloroethylsilane, bp 97-98°, n_D^{20}

1.4250, over oxidic catalyst, prepared from cupric and ferric nitrate, at 425-574°, indicates that decomposition of this compound takes place with the formation of side

Card 3/4

~~Synthesis of Aliphatic-Aromatic Silanes and~~
Their Dehydrogenation

SOV/19-70-1-16/18

products. Work dealing with the selection of the catalysts for dehydrogenation of aliphatic-aromatic silanes is being continued. The authors express their gratitude to T. K. Lavrovskaya for analysis of gases. There are 10 references, 6 Soviet, 2 German, 2 U.S. The U.S. references are: Hurd, D., J. Am. Chem. Soc., 67, 1545 (1945); Roland, P., Marquardt, K., Luce, E. W., Anal. Chem., 23, 629 (1951).

ASSOCIATION: N. D. Zelinskiy Institute of Organic Chemistry of the Academy of Sciences of the USSR (Institut organicheskoy khimii imeni N. D. Zelinskogo AN SSSR)

SUBMITTED: January 21, 1959

Card 4/4

5.3620

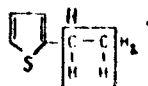
77409
SOV/19-30-1-70/78

AUTHORS: Balandin, A. A., Marukyan, G. M., Seymovich, R. G.,
~~Lavrovskaya, T. K.~~, Levitskiy, I. I.

TITLE: Catalytic Dehydrogenation of 2-Ethylthiophene

PERIODICAL: Zhurnal obshechey skimii. 1960, Vol 30, Nr 1, pp 321-324
(USSR)

ABSTRACT: Catalytic dehydrogenation of 2-ethylthiophene at 500-
600° over copper-chromium oxides, copper-iron oxides,
and copper-iron nitrates forms 2-vinylthiophene. Accord-
ing to the multiplet theory, catalytic dehydrogenation
of the ethyl group can be represented by the following:



Card 1/3

Catalytic Dehydrogenation of 2-Ethylthiophene

77409
SOV/79-30-1-70/78

where the reacting atoms, in contact with the catalyst, are within the square. The reaction was conducted in a flow system (at the space velocity of 0.15-0.38 hr⁻¹) at atmospheric pressure in presence of water vapor and carbon dioxide as well as in absence of these diluents. The product was collected in a receiver provided with a condenser and analyzed by bromometric titration, making a correction for bromination of the thiophene ring; the gaseous products, collected in a gasometer, were analyzed in the Orsat apparatus. The 2-ethylthiophene (bp 135.0-135.5° (741.5 mm); n_D^{20} 1.5130; d_4^{20} 0.990) was submitted by Ya. L. Gol'dfarb.⁷ Best results were obtained by dehydrogenation at 525-575° using copper-iron oxides as catalyst. Under these conditions, the dehydrogenation was not accompanied by side reactions, such as breaking off of the side chain (only 0.2-0.3% of unsaturated hydrocarbons--saturated hydrocarbons were not determined--were found in the gaseous products), and yielded 50-60% of vinylthiophene. Addition of CO₂

Card 2/3

Catalytic Dehydrogenation of 2-Ethylthiophene

77409
SOV/79-50-1-70/78

enhances decomposition (resulting in 1.6-2.8% unsaturated hydrocarbons). Preliminary experiments have shown that under the conditions of the experiment the thiophene ring is not opened. There are 2 tables; and 19 references, 11 Soviet, 2 German, 1 U.K., 5 U.S. The 5 most recent U.S. and U.K. references are: Ch. Walling, J. Am. Chem. Soc., 70, 1543 (1948); Synthetic Rubber, N. Y., 694 (1954); W. S. Emerson, T. M. Patrick, J. Org. Ch., 13, 729 (1948); Am. Pat. 2689855 (1954); Hartough Howard, Thiophene and Its Derivatives, London, 62 (1952).

ASSOCIATION: N. D. Zelinskiy Institute of Organic Chemistry (Institut organicheskoy khimii imeni N. D. Zelinskogo)

SUBMITTED: December 22, 1958

Card 3/3

27126

S/080/60/033/008/019/022/XX
D213/D305

53400

AUTHORS: Balandin, A.A., Freydlin, L.Kh., Rozina, V.S.,
Sorokin, P.Z., and Voroshilov, G.A.

TITLE: Method of preparing 2-isopropylantraquinone

PERIODICAL: Zhurnal prikladnoy khimii, v. 33, no. 8, 1960,
1893 - 1896

TEXT: Recently alkylantraquinones have been applied as hydrogen carriers in producing hydrogen peroxide. It has, therefore, been necessary to look for new methods of preparing these compounds on an industrial scale. The specific reaction with which the authors were concerned was to prepare 2-isopropylantraquinone in two stages, instead of four as in Scholl's method, which involved reacting isopropylbenzene with phthalic anhydride and reducing the resulting 4-isopropylbenzoyl-2-benzoic acid to 4-isopropanyl-benzyl-2-benzoic acid followed by cyclization of the latter in the presence of sulphuric acid. To avoid the formation of sulphonic acid

Card 1/3

27126

S/080/60/033/008/019/022/XX
D213/D305

Method of preparing ...

derivatives and to increase the yields of the required quinone the authors investigated the influence of the oleum concentration, temperature and period of heating. In the case of 3 % oleum and heating for 1 - 3 hours sulphonation occurred. When the concentration was increased to 8 % the yield of quinone was 15 %; however, this yield decreased when 12 - 20 % oleum was used. The effect of heating with 8 % oleum is shown, and it is clear that the time of reaction determines the yield of quinone. Best results were obtained with reaction times of 2.5 - 3 hours, and under optimum conditions the yield reached 55 - 60 %. In the earlier investigations the first stage, condensation of phthalic anhydride with isopropylbenzene, was conducted in a carbon disulphide medium. The authors, however, used chlorobenzene as a less hazardous solvent and achieved 88 % yields of 4-isopropylbenzoyl-2-benzoic acid. The quinone obtained in the present work had a melting point of 56.5 - 57.0°C, (recrystallized from alcohol) as compared with 45°C given in the literature. The composition and properties of the resulting product corresponded to those of isopropylantraquinone. The quinone

Card 2/2

27126

Method of preparing ...

S/080/60/033/008/019/022/XX
D213/D305

obtained in both the laboratory apparatus and the model plant had a melting point of 56°C and its C and H contents corresponded with the formula $\text{C}_{17}\text{H}_{14}\text{O}_2$. The use of isopropylanthraquinone as a hydrogen transferring agent was studied by hydrogenating the compound in the presence of a skeletal nickel catalyst until a thick mass of 2-isopropylanthrahydroquinone was formed. After separation of the catalyst the product was oxidized with air and the hydrogen peroxide formed was removed with water. A similar reaction has been found to proceed with 2-ethylanthraquinone. In both cases the melting point of the material recovered corresponded to that of the original quinone. There are 1 figure, 1 table and 2 non-Soviet-bloc reference. The reference to the English-language publication reads as follows: A.T. Peters, P.M. Rowe, J. Chem. Soc., 181, 1945. X

SUBMITTED: February 25, 1960

Card 3/3

BALANDIN, A.A.; ROZHDESTVENSKAYA, I.D. (Moscow)

Kinetic determination of the energy of the bond between H, D,
O, O and N, and zinc oxide. Zhur. fis. khim. 34 no.4:872-879
Ap '60. (MIRA 14:5)

1. Akademiya nauk SSSR Institut organicheskoy khimii imeni N.D.
Zelinskogo.

(Chemical bonds) (Zinc oxide)
(Dehydrogenation)

S/076/60/034/009/030/041XX
B020/B056

AUTHORS: Balandin, A. A., Kukina, A. I., and Malakhova, E. A.
TITLE: Catalytic Decomposition of Di-n-butyl Sulfide on α -Fe
PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9,
pp. 2030 - 2040

TEXT: It was the purpose of the present work to carry out a multi-purpose investigation of the process of decomposition by means of kinetic, thermomagnetic, radiographical and chemical analyses for the purpose of explaining the mechanism of the desulfurization on contacts containing reduced iron by the example of the catalytic model reaction. The catalytic and thermal conversion of Di-n-butyl sulfide and n-butyl mercaptan was studied with the help of a flowing-through method in a device used in the authors' laboratory. It was found that the sulfide decomposes thermally at temperatures of more than 400°C. The kinetics of the catalytic decomposition of the sulfide was studied at 300 - 400°C, where 8 ml reduced α -iron in a 6.5 cm thick layer was used at a feed rate of the substance of 0.18 ml/min. The experiments took 45 - 50 minutes. The mean gas evolu-

Card 1/4

Catalytic Decomposition of Di-n-butyl
Sulfide on α -Fe

S/076/60/034/009/030/041XX
B020/B056

tion rate per minute with a duration of the experiments of 15 to 30 minutes was taken for the calculations. For the purpose of displacing the initial material and the decomposition products from the reaction zone, nitrogen was blown through, and the catalyst was regenerated with hydrogen at a temperature that was 50°C above the experimental temperature, with the result that H₂S was evolved. The composition of the gaseous decomposition products is given in Table 1, from which it may be seen that unsaturated and saturated hydrocarbons (up to 17%) as well as H₂ were liberated. H₂S is formed after a longer time of contact, if the activity of the catalyst is highly, and the decomposition of the sulfide is little reduced. Other sulfur-organic compounds are not formed. Fig. 1 shows $\log \nu$ as a function of $1/T:10^4$, from which the apparent activation energy E is calculated as amounting to 12.7 kcal/mole. The results of the hydrogenation of Di-n-butyl sulfide on α -Fe are given in Table 2, and the composition of the gases, determined by the low-temperature rectifying apparatus UNATIM-51 (TsIATIM-51) are given in form of a summary. The results obtained by means of a catalyst poisoned with sulfur at a hydrogenolysis of the Di-n-butyl sulfide at 430 - 480° are given in Table 3, where it was found that

Card 2/4

Catalytic Decomposition of Di-n-butyl
Sulfide on α -Fe

S/076/60/034/009/030/041XX
B020/B056

sulfidized α -Fe hydrogenizes sulfides more slowly at higher temperatures, which may be seen from the values of the activation energy. Fig. 2 shows the thermomagnetogram of α -Fe, upon which Di-n-butyl sulfide was decomposed at 300 - 400°, whereas Fig. 3 shows the change in magnetization with the temperature for a catalyst, which had been poisoned with mercaptan at 270° and did not decompose the sulfide. When this catalyst was brought into contact with Di-n-butyl sulfide at 430 - 480°, a further accumulation of sulfur was found to occur (Fig. 4, curve 1), where a maximum occurs at 200°, and at 280° magnetization vanishes. When cooling the specimen, a sharp rise of magnetization is found (Fig. 4, curve 2). Table 4 shows the results obtained by X-ray structural analysis. By the catalytic decomposition of the sulfide and mercaptan, also compounds FeS_{1+x} are formed, where $x < 1$. The effect produced by these compounds upon the desulfurization is investigated on α -Fe by means of carbidization and sulfidization tests, where the apparent activation energy of the sulfidized catalyst equals 19.7 kcal/mole. On the basis of the multiplet theory, schemes (index groups) for the decomposition of sulfur-organic compounds and hydrogenolysis were suggested, which are confirmed by data from publications and the results obtained here. Mention is made of I. N. Tits, F. P. Ivanovskiy, and Card 3/4

Catalytic Decomposition of Di-n-butyl
Sulfide on α -Fe

S/076/60/034/009/030/041XX
B020/B056

V. N. Kondrat'yev, Yu. P. Simanov and V. B. Yevdokimov are thanked. There are 4 figures, 4 tables, and 34 references: 18 Soviet, 7 US, 1 British, 2 French, 1 Dutch, and 5 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 26, 1958

Card 4/4

80008

5.1190
AUTHORS: 1Agronomov, A. Ye., Balandin, A. A.,
Academician, Mardashev, Yu. S.S/020/60/131/05/038/069
B004/B014

TITLE: The Dependence of Activation Energy on the Relative Adsorption Coefficient

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1120-1122 (USSR)

TEXT: The authors of the article under review studied several nickel catalysts within a wide temperature range, using dehydrogenation of cyclohexane. The same amount of nickel was applied to different carrier substances (Al_2O_3 , silica gel, kieselguhr) in equal proportions by weight. The data listed in table 1 indicate that the apparent activation energy, Q , calculated from the Arrhenius equation, and the relative adsorption coefficient, z_2 , of the benzene being formed are greatly dependent on the nature of the carrier substance. These two quantities are interrelated by $Q = E - k \log z_2$ (E and k are constants). This relationship is graphically represented in figure 1. For all catalysts under consideration it was found that E was constant and 14 kcal/mole approximately. This value corresponds to the initial coordinate of the straight line depicted in figure 1, and thus represents the true activation energy. For nickel applied to silica gel (second sample) it was found that the value of z_2 increased in dependence of

Card 1/2

80008

The Dependence of Activation Energy on the Relative
Adsorption Coefficient

S/020/60/131/05/038/069
B004/B014

the benzene content of the starting mixture of $C_6H_6 + C_6H_{12}$ (Table 2, Fig 2). Proceeding from results obtained by other research workers, the authors discuss this dependence and arrive at the following conclusion: As long as the dehydrogenation of C_6H_{12} by means of a nickel catalyst takes place at active points of mean activation energy, which are moderately covered with C_6H_6 , α_2 does not depend on the yield, α . However, as soon as these points are covered with a larger amount of C_6H_6 , the benzene has an inhibitory effect, and the relation $\alpha_2 = f(\alpha)$ occurs, as may be seen when using catalysts with great values of α_2 . Taking this into account, one obtains a value of E for the second sample, which is in close agreement with the E -values of the other catalysts. Graphical solving of the relation $Q = E - k \log \alpha_2$ is recommended as another variant. The authors refer to a publication by A. A. Balandin and Yu. K. Yur'yev (Ref 10). There are 2 figures, 2 tables, and 12 references, 10 of which are Soviet. 4

ASSOCIATION: moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov) Institut organi-
cheskoy khimii im. N. D. Zelinskogo Akademii nauk SSSR (Institute
of Organic Chemistry imeni N. D. Zelinskiy of the Academy of
Sciences of the USSR)

SUBMITTED: December 28, 1959
Card 2/2

S/020/60/132/02/27/067
B011/B0025.3200
AUTHORS: Bogdanova, O. K., Balandin, A. A., Academician, Belomestnykh, I. P.TITLE: Catalytic Dehydrogenation of Isopropyl Benzene

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 343-345

TEXT: The authors investigated the reaction kinetics and the influence of the structure of the carbon molecule on the reaction rate of the catalytic dehydrogenation of isopropyl benzene. The experiments were conducted according to the continuous method on a mixed-oxide catalyst (Ref. 3). The substance used for dilution was water vapor (weight proportion of 1:2). Before the reaction, the water vapor was overheated to 300°. The contents of CO₂, unsaturated and saturated hydrocarbon and hydrogen were determined in the gas obtained after the reaction. The catalysate was colorless. A far-reaching agreement was observed between the amount of liberated hydrogen and the developing α -methylstyrene (Table 1). For 30 min a mixture of air and water vapor was blown through the catalyst after each experiment, and thus the activity of the catalyst was maintained. The kinetics of the above reaction was investigated at 500°-550° with a passage of 0.42 ml within 3 min. The latter corresponded to a volume

Card 1/3

Catalytic Dehydrogenation of Isopropyl Benzene

80452

S/020/60/132/02/27/067
B011/B002

velocity of 800 ml per 1 l of the catalyst per 1 h. The reaction rate was determined from the amount of the liberated hydrogen. The contact gas mainly consists of hydrogen with 0.5% to 2.0% of CO₂, and contains up to 0.4% of unsaturated, but no saturated hydrocarbons (Table 1). The constants of the reaction rate were calculated from the obtained data according to Ref. 7 on the basis of equation (1) in such a way that they can be used under the conditions of a continuous system. The authors also investigated the rate of dehydrogenation of binary mixtures of isopropyl benzene with α -methyl styrene and hydrogen. From the results they determined the relative adsorption coefficients (α_2 and α_3) of the reaction products. For this purpose they used the formula given by Ref. 8. Table 2 shows the values of these coefficients. Hence α_2 of α -methyl styrene is reduced from 3.8 at 520° to 0.95 at 550°. As regards hydrogen however, the value of α_3 does not change with the temperature and is 0.7. Fig. 1 shows the logarithmic dependence of the reaction rate constants on the absolute reciprocal temperature. The points form a straight line. The Arrhenius equation is observed. The activation energy is 30.3 kcal/mole and the pre-exponential factor $\lg k_0 = 6.25$. The authors found out that the grain size of the catalyst (1.5, 3, and 5 mm) is of no effect on the process. The dependence of the yield of α -methyl styrene on the temperature of the catalyst with various grain sizes

Card 2/3