L 37660-66 EWP(k)/EWT(d)/EWP(h) EWP(l)/EWP(v) BC/GD

ACC NR: AT6012354 SOURCE CODE: UR/0000/66/000/000/0190/0201

AUTHOR: Gurevich, I. M.; Obolenskiy, V. N.; Portnov, M. L.; Pshenichnikov, A. M.; Khvoles, V. A.

36

B+1

ORG: none

TITLE: Complex tele-information system for industrial plants 14

SOURCE: Nauchno-tekhnicheskaya konferentsiya po sredstvam promyshlennoy telemekhaniki. Moscow, 1963. Promyshlennaya telemekhanika (Industrial telemechanics); materialy konferentsii. Moscow, Izd-vo Energiya, 1966, 190-201

TOPIC TAGS: remote control system, supervisory control system, industrial automation

ABSTRACT: Developed by the Central Scientific Research Institute of Complex Automation (TsNIIKA), a system for transmission of discrete and continuous information over a distance up to 20 km is briefly described. The system is intended for connecting individual automatic machines and plants with their control computers and also with the dispatcher's desk; it is designed for a chemical combine whose

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ACC NR: AT6012354

individual parts are scattered over an area. The system includes the equipment for transmission and reception of information, for data processing, insertion into and withdrawal from the computers; the central dispatcher's station equipment includes digital display panels, scaling devices, parameter-deviation signaling devices and recorders, and integral-parameter and statistical-data recorders. Block diagrams of principal parts of the system are explained. Orig. art. has: 6 figures.

SUB CODE: 09,13/SUBM DATE: 08Jan66

Card 2/2

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

OBOLENSKIY, Ye.L., starshiy master.

Hand press for making washers and nuts. Energetik 2 no.9:22 S '54.
(Punching machinery)
(MLRA 7:9)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

OBOLENSKIY, Ye. P.: Master Tech Sci (diss) -- "Investigation of the stressed state of grooved rolls in twisting". Moscow, 1958. 15 pp (Min Higher Educ USSR, Moscow Automotive Mechanics Inst), 200 copies (KL, No 3, 1959, 110)

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

113-58-7-7/25

AUTHOR: Obolenskiy, Ye.P.

TITLE: Experimental Determination of the Torsional Rigidity of Splined Shafts (Eksperimental'noye opredeleniye krutil noy zhestkosti shlitsevykh valov)

PERIODICAL: Avtomobil'naya promyshlennost', 1958, Nr 7, pp 16-17 (USSR)

ABSTRACT: The analytical determination of the torsional rigidity for profiles with a complicated cross section is very difficult. A method of experimental determination is suggested by the author. It also permits the determination of the magnitude of the moment of inertia of various sections under torsion. A total of 17 splined shafts of diverse brands of steel with diverse section profiles (Nr 1 and 2 splined shafts with 4 teeth, Nr 3 to 6 shafts of the transmission of the "Universal" Tractor of the Vladimirskiy traktornyy zavod (Vladimir Tractor Plant), Nr 7 to 17 the secondary shafts of the transmission of the ZIL-150 car) were placed under torsional stresses. Nr 12 to 17 were subjected to high-frequency hardening. The obtained results are represented in tables arranged by the serial shaft numbers of the experiment. Such experiments can be carried out in the usual plant laboratories where there is a torsion test machine.

Card 1/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

113-58-7-7/25

Experimental Determination of the Torsional Rigidity of Splined Shafts

There is 1 diagram, 1 graph, 5 tables and 5 Soviet references.

ASSOCIATION: Moskovskiy avtomekhanicheskiy institut (The Moscow Automechanical Institute)

1. Shafts--Stresses 2. Shafts--Test results

Card 2/2

OBoLENSKiy, Ye P.

14(10); 18(7) PHASE I BOOK EXPLOITATION SOV/3189

Raschety na prochnost'; teoreticheskiye i eksperimental'nyye issledovaniya prochnosti mashinostroitel'nykh konstruktsiy: sbornik statey Vyp. 4 (Strength Calculations: Theoretical and Experimental Studies of the Strength of Machine Structural Elements: Collection of Articles, No. 4) Moscow, Mashgiz, 1959. 393 p. Errata slip inserted. 3,600 copies printed.

Editorial Commission: Ye. N. Tikhomirov (Chairman) Honored Worker in Sciences and Technology of the RSFSR, Professor, S. V. Serensen, Corresponding Member, Ukrainian SSR Academy of Sciences, Doctor of Technical Sciences, Professor, G. S. Glushkov, Doctor of Technical Sciences, Professor, S.D. Ponomarev, Doctor of Technical Sciences, Professor, S. N. Sokolov, Doctor of Technical Sciences, Professor, N. D. Tarabasov, Doctor of Technical Sciences, Professor V. M. Makushkin (Secretary) Candidate of Technical Sciences, Docent· Ed.: N. D. Tarabasov, Doctor of Technical Sciences. Managing Ed. for Literature on General Technical and Transport Machine Building: V. I. Kubarev, Engineer; Ed. of Publishing House: R. M. Korableva, and A. G. Nikitin; Tech. Eds.: Z. I. Chernova, and V. D. El'kind.

PURPOSE: This book is intended for engineers and designers/in machine building as well as for engineers of other specialties working on stress analysis. It may be used as a text by students in the field.

COVERAGE: This book contains original stress analysis calculations made on machinery elements and parts. Analyses are made of coiled springs with an arbitrary helix angle, bending of turbine discs, strain state of flat pistons, and a circular cylinder. A number of original applications of general methods of the theory of elasticity to the study of lateral bending and torsion of rods is given. In the calculations on stability, new methods of determining critical forces for compressed rods and analyzing the stability of circular and ring-shaped plates are applied. Calculations for dynamic loadings are represented by a study of the analysis of variations of the indicators of devices during vibration. References accompany individual articles.

5

39209

S/044/62/000/006/082/127
B168/B112

46 2170

AUTHOR: Obolenskiy, Ye. P.

TITLE: Use of the method of finite differences for an investigation of the stresses to which splined shafts are subject during rotation

PERIODICAL: Referativnyy zhurnal. Matematika, no. 6, 1962, 30-31, abstract 6V147 (Sb. "Raschety na prochnost'", M., Mashgiz, no. 4, 1959, 205-223)

TEXT: The author gives results of a calculation, by the method of finite differences, of the stresses to which a splined shaft is subject during rotation, the shaft in question having four teeth of varying heights and different sections. The familiar 5-point and 9-point difference equations were used for the calculation in the case of a square grid. The boundary values at those points of the grid range not coinciding with the contour of the given cross-section were corrected by Shaw's formulas whose order of error is a^3 (a = grid step). The stress function, which satisfies

Card 1/2

Use of the method of finite...

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B168/B112

Poisson's equation

$$\frac{\partial^2 F}{\partial x^2} + \frac{\partial^2 F}{\partial y^2} = -2$$

when F = 0 on the contour, was determined for different grid steps. As a result of the calculation, the value of the stress in the center of the grooves of a splined shaft was determined with greater accuracy and was shown to depend on the height of the tooth; the coefficient of stress concentration was shown to depend on the section of the splined shaft. A formula for calculating this value is given. The torsional rigidity of the splined shaft was also shown to depend on the tooth height. [Abstracter's note: Complete translation.]

Card 2/2

GOL'D, B.V., doktor tekhn.nauk; OBOLENSKIY, Ye.P., kand.tekhn.nauk;
YEGOROV, L.A., kand.tekhn.nauk

Strength of motor-vehicle shafts. Vest.mash. 41 no.1:22-27
Ja '61. (MIRA 14:3)
(Motor vehicles—Transmission devices)

GOL'D, B.V., doktor tekhn.nauk; OBOLENSKIY, Ye.P., kand.tekhn.nauk

Strength analysis of semiaxles of motor vehicles. Avt.prom. 28 no.2:23-26 F '62. (MIRA 15:2)

1. Moskovskiy avtomekhanicheskiy institut.
(Motor vehicles--Axles)

OBOLENSKIY, YE. S.

AID P - 724

Subject : USSR/Engineering

Card 1/1 Pub. 29 - 17/26

Author : Obolenskiy, Ye. S., Foreman

Title : Hand-press for washers and nuts

Periodical : Energetik, 9, 22, S 1954

Abstract : The author briefly describes the press of his own design. One drawing.

Institution : None

Submitted : No date

OBOLENSKIY, Yu. A. [Obolens'kyi, IU. A.], inzh.

Cemented gravel filter. Mekh. sil' hosp. 9 no. 7:24-25 Jl '58. (MIRA 11:8)

(Filters and filtration)

OBOLENSKIY, Yu.A. (Kiyev)

Automatization of water works. Vod.i san.tekh. no.9:19 S '59. (MIRA 12:12)

(Water-supply--Automation)

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

OBOLENSKIY, Yu.A. [Obolens'kyi, IU.A.], dots.

Pump without packing cups. Mekh.sil'.hosp. 11 no.2:24-25
F '60. (MIRA 13:6)
(Pumping machinery)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

OBOLENSKIY, Yu.A. (Kiyev)

Laying an underwater pipeline with a diameter of 1400 mm.
by dragging it across the river bed. Stroi. truboprov. 7
no.7:21-22 Jl '62. (MIRA 15:7)
(Pipelines)

OBOLENTSEV, F. D.

PA 196T92

USSR/Metals - Steel, Castings Jun 51

"Obtaining Sound Thermal Joints in Steel Castings," Dr Tech Sci, Laureate of Stalin Prize, Yu. A. Nekhendzi, F. D. Obolentsev Cand Tech Sci, Leningrad Polytech Inst imeni M. I. Kalinin

"Litey Proizvod" No 6, pp 15-19

Conducted expts to establish conditions for obtaining sound metal in X, T, L, Y and V-shaped joints of steel castings, using metal chills, Also studied influence of dimensions and material of chills on their effectiveness.

196T92

USSR/Metals - Steel, Castings (Contd) Jun 51

Discusses directional solidification, as a most essential factor in fabrication of good castings, and outlines methods for controlling, with the aid of metal chills, solidification of intricate castings.

196T92

Obolentsev, F.D.

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Distr: 4E4j/4E2c

The influence of the gas phase of forms on the quality of cast surfaces. F. D. Obolentsev. *Novoe v Teorii i Praktike Litein. Proizvodstva* (Moscow-Leningrad: Gosudarst. Nauch.-Tekh. Izdatel. Mashinostroitel. Lit.) *Sbornik* 1956, 201-14; *Referat. Zhur., Met.* 1956, Abstr. No. 12099. —Roughness of the surface of castings occurs because of penetration into the pores of the mold by metal (metal-penetration roughness (I)) or by gases from without or generated from the metal (gaseous roughness (II)). The conditions were analyzed for the formation of each of these roughness types. I was formed under the action of the hydrostatic pressure of the metal. Capillary forces, depending on whether or not the metal form is wet, can increase or decrease I. I is directly dependent upon the coarseness of the molding medium, the temp. of the metal, and its contact time in the mold. To counteract I the oxidation of the metal must be reduced by creating a reducing atm., by reducing the liberation of oxidizing gases from the mold and its permeation from without. Practically gas-impervious forms can be obtained by heat-treatment (an example is given of the use of $NaNO_3$ and KNO_3 as a mixed compn.). The struggle against II in accordance with the causes which bring it about (the introduction of gases from without and the sepn. from within, with the possibility of breaking through the thin skin of the metal) should be carried on in 2 directions: (1) reduction of the gas content of the metal and the absorption of H in molding mixts. (data are given on the quantity of absorbed H as a function of the compn. of molding mixt.); (2) coated gas-impervious forms, and still better, forms with a gas-impervious coating.

C. H. Fuchsman

3

2

OBOLENTSEV, F. D.

Side casting molds. F. D. Obolentsev. U.S.S.R. [illegible] 249, Nov. 25, 1956. A model is made of [illegible] This is covered with a fritting [illegible] other [illegible] fractur[illegible]

OBOLENTSEV, F.D

25(1) p 3 PHASE I BOOK EXPLOITATION SOV/1440

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti. Leningradskoye oblastnoye pravleniye

Lit'ye povyshennoy tochnosti (High-precision Casting) Moscow, Mashgiz, 1958. 196 p. (Series: Its: Sbornik, kn.45) 7,000 copies printed.

Ed.: A.N. Sokolov; Tech. Ed.: L.V. Sokolova; Managing Ed. for Literature on Machine-building Technology (Leningrad Division, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: This book is intended for engineers and technicians at foundries and planning and research institutes.

COVERAGE: The book contains the transactions of a special conference called in November, 1956, by the Leningrad Oblast Administration of the Nauchno-tekhnicheskoye obshchestvo NTO (Scientific and Technical Society of the Machine-building Industry). The articles describe advanced techniques used in

Card 1/5

High-precision Casting SOV/1440

precision-casting processes such as shell molding, investment casting, pressure die casting, press die casting (called in Russian "forging of liquid metal"), and suction casting. Special attention is given to the production of large precision castings, one of the principal problems in the industry. At the same time, methods of improving the precision of sand-mold castings are examined. Experience gained in the mechanization of precision-casting and shell-molding processes is reported. Information is given on the present state of precision casting, both in the USSR and elsewhere. No personalities are mentioned.

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High-precision Casting SOV/1440

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APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

High-precision Casting SOV/1440

AVAILABLE: Library of Congress

GO/rj
5-5-59

Card 5/5

S/123/59/000/010/064/066
A004/A001

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1959, No. 10, p. 200, # 38750

AUTHOR: Obolentsev, F. D.

TITLE: One-Piece Clinkering Molds as Means of Increasing the Casting Precision 18

PERIODICAL: V sb.: Lit'ye povyshennoy tochnosti. Moscow-Leningrad, Mashgiz, 1958, pp. 43-54

TEXT: The author reports on the effects of on-piece clinkering molds and precision of models and molds on the linear dimensions of castings By tests it was established that the precision of linear casting dimensions depends on the following factors: 1) The model should be made with the prescribed tolerances of materials making it possible to preserve this precision during the mold-manufacturing process; the best models are of metal or dispensable patterns on a polystyrene base. 2) Mold materials should possess a good consistancy, therefore dry materials and suspensions are used. 3) It must be possible to remove the

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S/123/59/000/010/064/068
A004/A001

One-Piece Clinkering Molds as Means of Increasing the Casting Precision

model from the mold without deforming the latter. 4) After the model being removed, the mold should not be subjected to temperature effects. 5) The mold should be of the one-piece type, since assembly operations cause the greater part of inaccuracies (50 - 70%). Their absence renders it possible to reproduce the model configuration with a high degree of precision, and warrants small tolerances in the dimensions of the mold as a whole. There are 11 figures.

Ya. N. P.

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

Card 2/2

OBOLENTSEV, F.D.

Properties of salt patterns and their effect on surface quality of one-piece molds. Lit. proizv. no.1:16-19 Ja '58. (MIRA 11:2)
(Patternmaking)

AUTHOR: Obolentsev, F. D. SOV/163-58-2-10/46

TITLE: The Formation of Sand Crust in Casts Produced of Different Alloys (Obrazovaniye prigara na otlivkakh izgotovlyayemykh iz razlichnykh splavov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 2, pp. 66-71 (USSR)

ABSTRACT: In casting iron-carbon alloys in sand molds silicates are formed due to the interaction between the metallic oxides and the material of the molds. The formation of silicates does not only occur during the metallic melt but also during its solidification. Also in the cooled metallic melt oxidation phenomena occur. The oxygen necessary for the oxidation is obtained mainly from the pores of the molds. To remove this unfavorable effect of the molds it is recommended to use molds that are as far as possible free of pores and gases. The oxidation products formed are equally distributed in the metallic melt. In working with alloys containing iron and chromium Al_2O_3 or Cr_2O_3 are formed in the casting process at the surface of the metallic melt. These oxides do not react with the silicon dioxide content of

Card 1/2

The Formation of Sand Crust in Casts Produced of Different Alloys SOV/163-58-2-10/46

the molds; thus it may be explained that alloys with aluminum and chromium content do practically not show such sand crusts when cast in molds containing silicon dioxide. Also the alloys containing chromium have the same properties. There are 4 figures and 1 table.

ASSOCIATION: Leningradskiy politekhnicheskiy institut (Leningrad Polytechnical Institute)

SUBMITTED: October 1, 1957

Card 2/2

OBOLENTSEV, F.D.

One-piece baked molds increase the precision of casting. [Izd.]
LONITOMASH 45:43-54 '58. (MIRA 11:6)
(Founding)

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

OBOLENTSEV, F.D.; KALENOV, V.P.

Effect of various factors on crack formation in molds during melting out of patterns. [Izd.] LONITOMASH 45:107-111 '58.
(MIRA 11:6)

(Founding)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

PHASE I BOOK EXPLOITATION SOV/4199

Leningrad. Politekhnicheskiy institut

Sovremennyye dostizheniya liteynogo proizvodstva; trudy mezhvuzovskoy nauchno-tekhnicheskoy konferentsii (Recent Achievements in Founding: Transactions of the Scientific and Technical Conference of Schools of Higher Education) Moscow, Mashgiz, 1960. 336 p. Errata slip inserted. 4,000 copies printed.

Resp. Ed.: Yu. A. Nekhendzi, Doctor of Technical Sciences, Professor; Eds.: N. G. Girshovich, Doctor of Technical Sciences, Professor, and K. P. Lebedev, Docent; Managing Ed. for Literature on Heavy Machine Building (Leningrad Department, Mashgiz): Ye. P. Naumov, Engineer; Tech. Eds.: Ye. A. Dlugokanskaya, and L. V. Shchetinina.

PURPOSE: This book is intended for the technical personnel of foundries. It may be used by students of the field.

COVERAGE: This collection of articles discusses problems in founding processes. Individual articles treat the melting of metals and their alloys, mechanization and automation of casting processes, aspects of the manufacture of steel, cast iron, and nonferrous metal castings. No personalities are mentioned. References accompany individual articles.

Recent Achievements in Founding (Cont.) SOV/4199

IV. PROBLEMS OF MOLD MAKING

Card 5/9

⑤

Obolentsev F.D.

OBOLENTSEV, Fedor Dmitriyevich; GULYAYEV, B.B., doktor tekhn. nauk,
prof., retsenzent; SOKOLOV, A.N., kand. tekhn. nauk, dots., red.;
VARKOVETSKAYA, A.I., red. izd-va; BARDINA, A.A., tekhn. red.

[Quality of cast surfaces] Kachestvo litykh poverkhnostei. Moskva,
Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 181 p.
(MIRA 14:9)

(Surfaces (Technology)) (Founding)

[illegible]

PHASE I BOOK EXPLOITATION SOV/5458

Girshovich, Naum Grigor'yevich, Doctor of Technical Sciences, Professor, ed.

Spravochnik po chugunnomu lit'yu (Handbook on Iron Castings) 2d ed., rev. and enl. Moscow, Mashgiz, 1961. 800 p. Errata slip inserted. 16,000 copies printed.

Reviewer: P. P. Berg, Doctor of Technical Sciences, Professor; Ed.: I. A. Baranov, Engineer; Ed. of Publishing House: T. L. Leykina; Tech. Eds.: O. V. Speranskaya and P. S. Frumkin; Managing Ed. for Literature on Machine-Building Technology (Leningrad Department, Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: This handbook is intended for technical personnel at cast-iron foundries. It may also be of use to skilled workmen in foundries and students specializing in founding.

COVERAGE: The handbook contains information on basic problems in the modern manufacture of iron castings. The following are discussed: the composition and properties of the metal; the making of molds; special casting methods; the charge preparation; melting

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

and modifying the cast iron; pouring, shaking out, and cleaning of castings; heat-treatment methods; and the inspection and rejection of castings. Information on foundry equipment and on the mechanization of castings production is also presented. The authors thank Professor P. P. Berg, Doctor of Technical Sciences, and staff members of the Mosstankolit Plant, headed by the chief metallurgist G. I. Kletskin, Candidate of Technical Sciences, for their assistance. References follow each chapter. There are 287 references, mostly Soviet.

TABLE OF CONTENTS:

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

Handbook on Iron Castings SOV/5458

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"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

[illegible], [illegible] I.

"The Influence of the Processes of Interaction Between the Metal and the Mould on the Quality of the Surface of the Casting"

report presented at the 7th Conference on the Interaction of the Casting Mould and the Casting, sponsored by the Inst. of Mechanical Engineering, Acad. Sci. USSR, 25-28 January 1961.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

KHACHATUROV, S.S.; OBOLENTSOV, F.D.

Producing the bushings of turbodrill blade rows by casting in ceramic molds obtained by hot pressing. Trudy VNIIBT no.14: 151-155 '65. (MIRA 18:5)

- OBOLENTSEV, N.I. (Khar'kov, Pushkinskiy v"yezd, d.6,kv.6)

Potentiated cerebrospinal anesthesia. Nov. khir. arkh. no.1:87-95 Ja-F '60. (MIRA 15:2)

1. Khirurgicheskoye otdeleniye Khar'kovskoy oblastnoy klinicheskoy bol'nitsy [illegible] fakul'tetskaya khirurgicheskaya klinika (zav. - prof. A.Z.TSeyt[illegible]) Khar'kovskogo meditsinskogo instituta.
(SPINAL ANESTHESIA)

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

OBOLENTSEV, N.I.

Significance of autonomic nerve block and continuous saturation of the patient with a mixture of air and oxygen in spinal anesthesia. (MIRA 14:4)
Khirurgiia 37 no.4:76-81 '61.

1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. A.Z. TSeytlin) Khar'kovskogo meditsinskogo instituta i khirurgicheskogo otdeleniya Khar'kovskoy oblastnoy klinicheskoy bol'nitsy (glavnyy vrach V.A. Pizhankova).
(SPINAL ANESTHESIA) (LOCAL ANESTHESIA)

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

L 16597-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 MLK/RM

S/0000/64/000/000/0348/0354

ACCESSION NR: AT4048196 B+1

AUTHOR: Obolentsev, R. D.; Torikov, D. M.; Alliluyeva, T. I.; Zolotukhina, O. M.

TITLE: Gas-liquid chromatography of organic sulfur compounds

SOURCE: Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po gazovoy khromatografii. 2d, Moscow, 1962. Gazovaya khromatografiya (Gas chromatography); trudy* konferentsii. Moscow, Izd-vo Nauka, 1964, 348-354

TOPIC TAGS: gas liquid chromatography, sulfoorganic compound separation, petroleum refining

ABSTRACT: Since methods for the chromatographic separation of high-boiling organic compounds containing sulfur have been only scantily described in the literature, the authors describe the work undertaken in this area by the Bashkir Branch of the AN SSSR in reference to the local petroleum products. The column was a coiled copper tube, 485 cm long, 6 mm in diameter, packed with refractory granulated brick (0.25-0.5 mm), treated with hydrochloric acid and filled with aviation oil MS-20 or with the ester of polyethylene glycol and adipic acid (PEGA) in a proportion of 10% by weight. Oil was preheated for 6-8 hrs. to 350C at 1-2 mm Hg to rid it of light components. Chromatography was

Card 1/2

L 16597-65
ACCESSION NR: AT4048196

carried out at 150C in a carrier stream (hydrogen) at 64 ml/min. The catharometer of stainless steel with helical tungsten filaments was (as usual) connected over a Wheatstone bridge with a recording potentiometer (type EPP-09) having a sensitivity of 5 mv. The recording tape moved at 120 mm/hr. The efficiency of the column was equivalent to 2560 theoretical plates with aviation oil and 2000 theoretical plates with PEGA. When using aviation oil, the logarithms of the relative retention volumes of organic sulfur compounds were linearly dependent on their boiling points, while the partition coefficients were independent of the boiling point. Both MS-20 and PEGA were found to be suitable for gas-liquid chromatography of the organic sulfur compounds contained in crude oil and boiling within the gasoline-kerosene fraction range. Types of compounds can be determined and sometimes individual compounds can be identified. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 16Jul64

ENCL: 00

SUB CODE: GC, FP

NO REF SOV: 002

OTHER: 013

Card 2/2

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

10

CA

Mechanism of the aromatization (of hydrocarbon oils) I. Composition of xylenes depending on the temperature of pyrolysis. A. P. Dobryanskiĭ and R. Obolentsev. *J. Gen. Chem.* (U. S. S. R.) **8**, 1810-15(1938).—To study the thermal effect on the compn. of isomeric xylenes and the possible interisomerization of xylenes in the pyrolysis of petroleum hydrocarbons, kerosene, b. 152-312°, and kerosene residue (initial b. p. 102°) were pyrolyzed at 600°, 650°, 700° and 750°. The tar and scrubbed oils were redistd. The combined fraction, b. 132-48°, contg. C_6H_6, PhMe and xylenes, was refractionated. The xylene fraction was freed from unsatd. compds. with 92% H_2SO_4, washed with NaOH, steam-distd. and dried with $CaCl_2$. The isomeric xylenes in the fractions were detd. by the method of Tausz (*C. A.* **14**, 2258) by oxidation with alk. $KMnO_4$ and pptn. of BzOH and *o*-, *m*- and *p*-phthalic acids with $BaCl_2$. The tentative results show that with increasing temp. of the pyrogenic decompn. the abs. and relative percentage of *m*-xylene increases rapidly, that of para isomer but slowly, while the contents of *o*-xylene and PhEt decrease. The isomerization of *o*-xylene into the meta isomer will be discussed in a later paper. C. B.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

[redacted]

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

Ca

10

The mechanism of hydrogenation of unsaturated hydrocarbons. I. The composition of technical diisobutylene. R. [illegible]—*J. Applied Chem.* (U. S. S. R.) 13, 198-[illegible](in French, 209)(1940).—The components of tech. diisobutylene were identified by analysis of the derivs. of the hydrolysis products of the O_3-treated polymers b. 95-125° (tech. diisobutylene). The following compds. were present in considerable amts.: 2,2-dimethyl-3-ethyl-3-butene, 2-methyl-3-isopropyl-3-butene and 3-methyl-3-ethyl-4-pentene. The amt. of the other isomers was about 10%.

A. A. Podgorny

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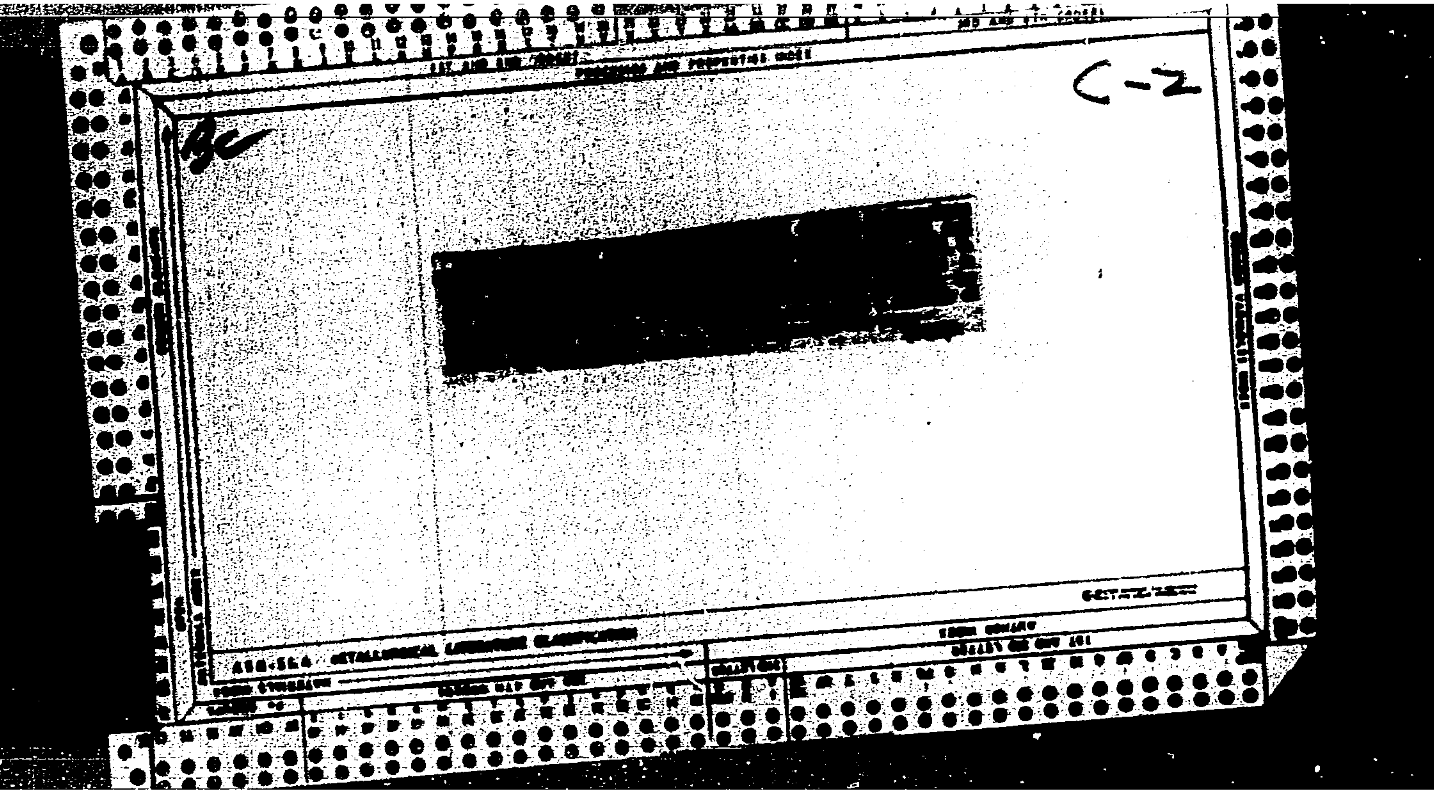
The isomerization of normal butylenes into isobutylene at atmospheric pressures. R. Obolentsev, M. Pushitnov, D. Rudkovskii and A. Trifel. *Neftyanaya Prom.* 1941, No. 1, 93-9; *Khim. Referat. Zhur.* 4, No. 9, 110(1941).— A production-scale method for the isomerization of butylenes was developed. Tech. butylenes obtained by dehydrating BuOH of the butyl-acetone fermentation were used as the initial raw materials. The mean compn. of the initial gas in wt. percent was: $MeCH:CH_2$ 0.5 – 0.8, divinyl 3.0 – 1.8, butylenes 89.6 – 3.0, isobutylene 2.2 – 1.4, CH_2Me_2 3.0 – 3.0, $(CH_2Me)_2$ 1.8 – 1.8 and liquid residue 0.3 – 0.8. The expts. were carried out in a simple lab. app. The effects of the temp., amt. of water vapors and the velocity of the gas were studied. H_3PO_4 and kieselguhr were used as catalysts. The life of the catalyst was approx. 400 hrs. The optimum conditions at atm. pressure were: temp. 300°, velocity 200 g./hr. (per l. of the catalyst), amt. of water 20% (vol.). The exit gas consisted of isobutylene (18-20%), butylenes (65-73%) and satd. hydrocarbons (3-5%). During the polymerization there was formed an av. of up to 15% of polymers with an octane no. of 80 (hydrated fraction 95-137°).

W. R. Henn

A10-SLA METALLURGICAL LITERATURE CLASSIFICATION



C-2

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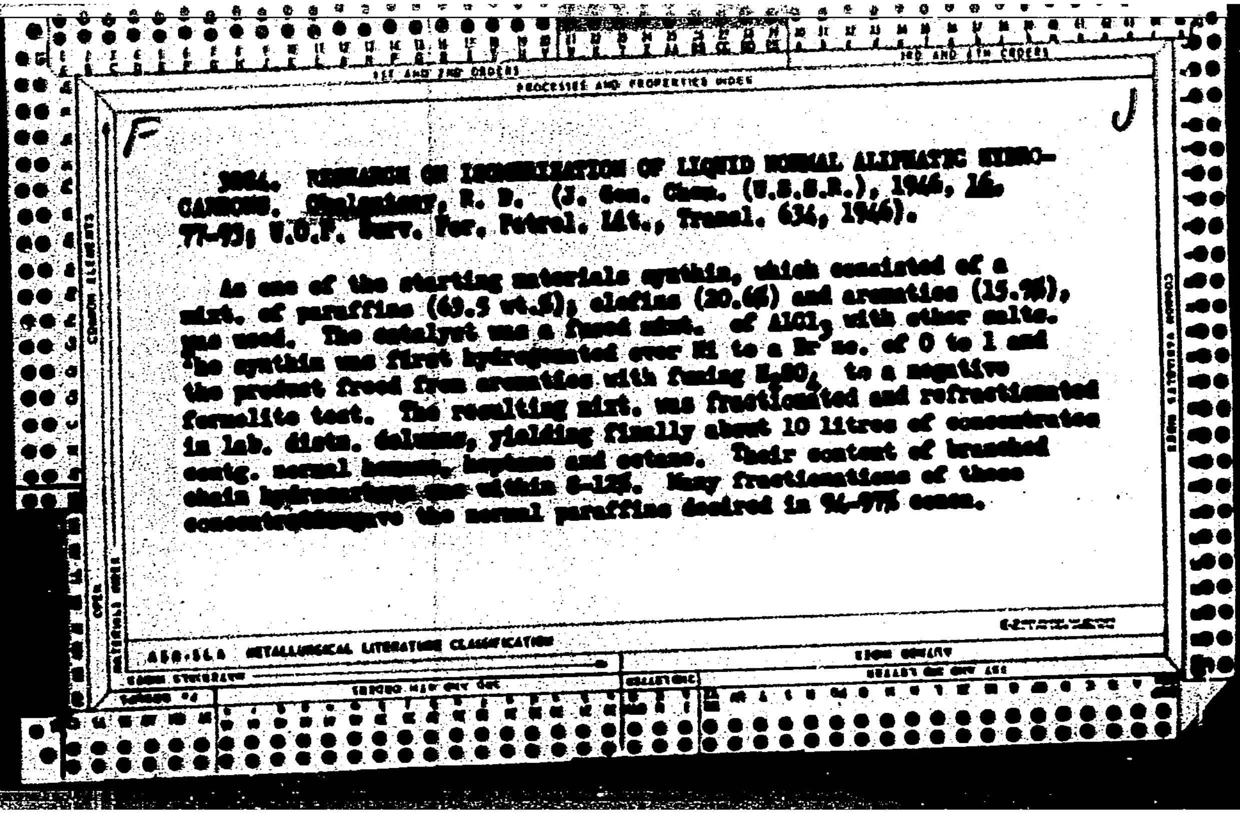
[redacted]

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

OBOLENTSEV, R. D.

"Physical Constants of Components Contained in the Light Motor Fuel," Gostoptekhizdat, Moscow, 1943



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F

J

3864. RESEARCH ON ISOMERIZATION OF LIQUID NORMAL ALIPHATIC HYDROCARBONS. Chalgatsky, R. D. (J. Gen. Chem. (U.S.S.R.), 1946, 16, 77-93; U.O.P. Surv. For. Petrol. Lit., Transl. 634, 1946).

As one of the starting materials synthin, which consisted of a mixt. of paraffins (63.5 wt.%), olefins (20.6%) and aromatics (15.9%), was used. The catalyst was a fused mixt. of $AlCl_3$ with other salts. The synthin was first hydrogenated over Ni to a Br no. of 0 to 1 and the product freed from aromatics with fuming H_2SO_4 to a negative formalite test. The resulting mixt. was fractionated and refractionated in lab. distn. columns, yielding finally about 10 litres of concentrates contg. normal hexane, heptane and octane. Their content of branched chain hydrocarbons was within 8-12%. Many fractionations of these concentrates gave the normal paraffins desired in 96-97% concn.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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841. DEHYDROGENATION OF 2,2,4-TRIMETHYLPENTANE OVER A CHROMIUM CATALYST. Chalentsev,- and Usov, Y. N. (J. Gen. Chem., U.S.S.R., 1946, 16, 933-6; U.O.P. Surv. For. Petrol. Lit., 6 Dec. 1946; U.O.P. Libr. Bull. Abstr., 30 Apr. 1947, 22, 70). In order to investigate the possibility of cyclization of hydrocarbons having no 6-membered carbon atom chain over chromia-alumina catalyst, a series of experiments was carried out aiming at dehydrocyclization of 2,2,4-trimethylpentane. A special flow type unit was used. The content of aromatics in the product was determined by the specific dispersion method, the content of unsaturated on the basis of bromine numbers. A substantial conversion to aromatics was established. Formation of olefins accompanied aromatization and prevailed below 504°, while at higher temperatures the amount of aromatics formed was greater. Carbon formation was more extensive than formation of aromatics. Raman spectrum analysis of a sample which had been treated at 510° established the presence of p-xylene and the absence of o-xylene and m-xylene. Absence of 3-methylheptane or known derivatives of cyclopropane, or of other naphthenes was also shown.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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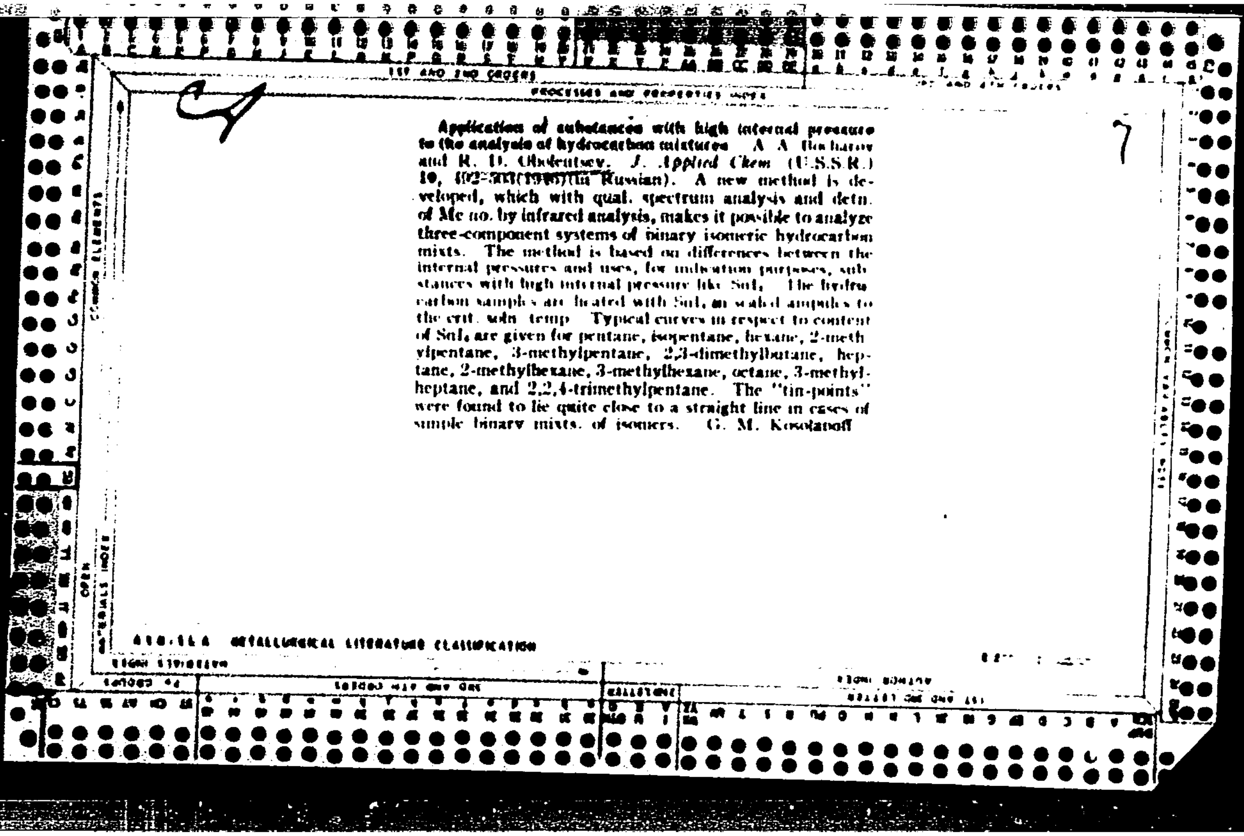
10

Pyrogenic decomposition of alkyl-aryl ethers. R. D. Obolentsev. *J. Gen. Chem.* (U.S.S.R.) 16, 1450-70 (1946). A complete analysis was carried out of the gaseous and liquid products of the pyrolysis of (I) PhOMe at 500°, rate of flow r = 1.0 g./min., total amt. a = 15019 g.; (II) PhOEt at 500°, r 0.75, a 308.6; (III) PhOEt at 700°, r 0.8, a 137, in porcelain tubes 2.2 cm. in diam., 80 cm. long. The total balance (% conversion, % gaseous, % liquid products) was: I 30.9, 14.6, 80.1; II 59.7, 18.9, 75.0; III 100, 37.2, 60.7. The liquid products were analyzed by a series of fractionations and extns. (complete scheme of sepn. given) combined with elementary analyses; their compn., in wt.-% of the total conversion products, was: H_2O, Me_2CO, MeCOEt, C_6H_6, PhMe, PhEt, m-$C_6H_4Me_2$, p-$C_6H_4Me_2$, coumarone, PhOH, o-EtC_6H_4OH, cresol, 2,3-xylenol, BzH, PhCOMe, coumaran, $C_{10}H_8$, unidentified, losses: I 1.3, 0.5, 0, 10.6, 0.8, 0, 0, 0, 0, 34.4, 0, 2.0, 0, 6.1, 0, 0, 0, 23.0, 11.4; II 0.8, 0, 0.2, 5.1, 0, 0.7, 0, 0, traces, 31.6, 4.3, 0, 0, 5.1, 2.4, 9.9, 0, 10.0, 0.9; III 0.9, 0, 0.5, 2.8, 0, 0, 0.25, 1.28, 2, 14.7, 0, 0, 2.1, 7.8, 0, 2.6, 1, 27.4, 7.4. On the basis of the products obtained, Bamberger's mechanism (cf. *Ber.* 19, 1818(1886)) of decompn. into PhOH and C_2H_4 is inapplicable. The alternative scheme proposed involves primary isomerization into aromatic alcs. and phenols; BzH is thus formed in 2 ways: (1) 2 PhOMe → 2 $PhCH_2OH$ → H_2O + $PhCH_2OCH_2Ph$ → BzH + PhMe (similarly BzMe + $PhCH_2Me$ from PhOEt) and (2) 2 PhOH → H_2O + $PhCH_2OPh$ → BzH + C_6H_6 (similarly BzMe + C_6H_6 from PhCH(OH)Me). Further decompn. of BzH gives C_6H_6 + CO. The low C_2H_4 and the high CH_4 content of the pyrolysis gases leads one to assume rupture of the ether bond at either the alkyl or the aryl and formation of free radicals: PhOMe → Ph + MeO and PhOMe → PhO + Me; further reactions of the radicals along Rice's scheme lead to the products actually found.

G. M. Kosolapoff

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND ORDERS

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C4

7

Application of substances with high internal pressure to the analysis of hydrocarbon mixtures A. A. [illegible] and R. D. Obolentsev. *J. Applied Chem.* (U.S.S.R.) 19, [illegible](1946)(in Russian). A new method is developed, which with qual. spectrum analysis and detn. of Me no. by infrared analysis, makes it possible to analyze three-component systems of binary isomeric hydrocarbon mixts. The method is based on differences between the internal pressures and uses, for indication purposes, substances with high internal pressure like SnI_4. The hydrocarbon samples are heated with SnI_4 in sealed ampules to the crit. soln. temp. Typical curves in respect to content of SnI_4 are given for pentane, isopentane, hexane, 2-methylpentane, 3-methylpentane, 2,3-dimethylbutane, heptane, 2-methylhexane, 3-methylhexane, octane, 3-methylheptane, and 2,2,4-trimethylpentane. The "tin-points" were found to lie quite close to a straight line in cases of simple binary mixts. of isomers. G. M. Kosolapoff

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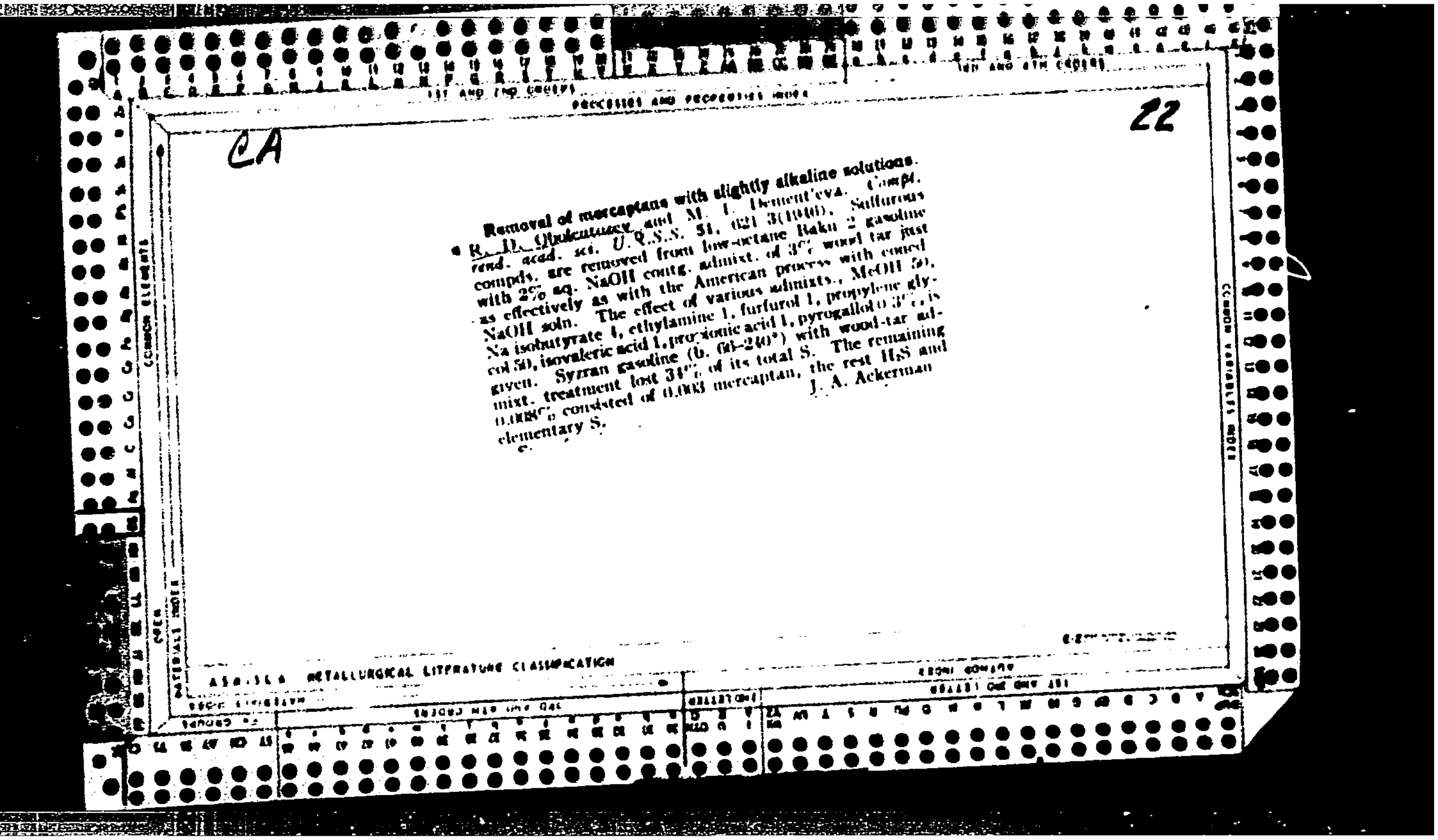
High-temperature purification of sulfur-containing gasoline. N. E. Vishnevskii and R. D. Obolentsev. *J. Applied Chem.* (U.S.S.R.) 19, 881–9~~(1946)(in Russian)~~.—In high (0.44%) S, low-octane crude gasoline, sulfonic acids and sulfones formed by treatment with concd. H_2SO_4 react on heating with H_2S, mercaptans, and org. sulfides, along $C_6H_5SO_3H = C_6H_6 + SO_3$ and $SO_3 + 3\ CH_3CH_2SH = 3\ CH_2{:}CH_2 + 3\ H_2O + 4S$; the oxidation of the org. S to elementary S is then followed by its reduction to H_2S, in the reducing medium prevailing above 300°; the reduction is catalyzed by Fe, along $Fe + S = FeS$, $Fe + H_2S = FeS + H_2$ and $FeS + RCH_2CH_2R = H_2S + RCH{:}CHR + Fe$. The reducing medium and the presence of H_2S, at the high temp., protect Fe against corrosion. Desulfurization by this method of a 55.8-octane gasoline contg. 56.7% paraffins, 28.1% cycloparaffins, 15.2% aromatic compds., 0.44% S (of which H_2S 18.1, mercaptans 13.7, disulfides 15.9, sulfides 6.7, elementary S 13.7, remaining S 31.9), sulfonated with 1.5% of its wt. concd. H_2SO_4, at 400–450°, under 50 atm., for 3 hrs., at a rate of 600 ml./hr., resulted, depending on conditions, in 0.04–0.08% S, octane no. (clear) 60.5–74, the remaining S being inactive, it can easily be further reduced to 0.004% by 3% H_2SO_4 and to 0.0015% with 5% H_2SO_4. Cracking of the sulfonated, high-temp. desulfurized gasoline yielded from 21.6 to 34.5% gas, as against 8.6% in standard light cracking. the dry gas contained $CH_3CH{:}CH_2$ 15.4, $CH_3CH_2CH{:}CH_2$ 8.3, $(CH_3)_2C{:}CH_2$ 0.0, CH_4 11.7, C_2H_6 20.0, $CH_3CH_2CH_3$ 19.2, butanes 13.8, C_2H_4 4.8, $CH_2{:}CH.CH{:}CH_2$ 0.4, H_2S 0.3, H_2 0.1, and thus constitutes a valuable chem. raw material. The elevation of the octane no. is due only to elimination of S, not to an increase in unsatd. compds. N. Thon

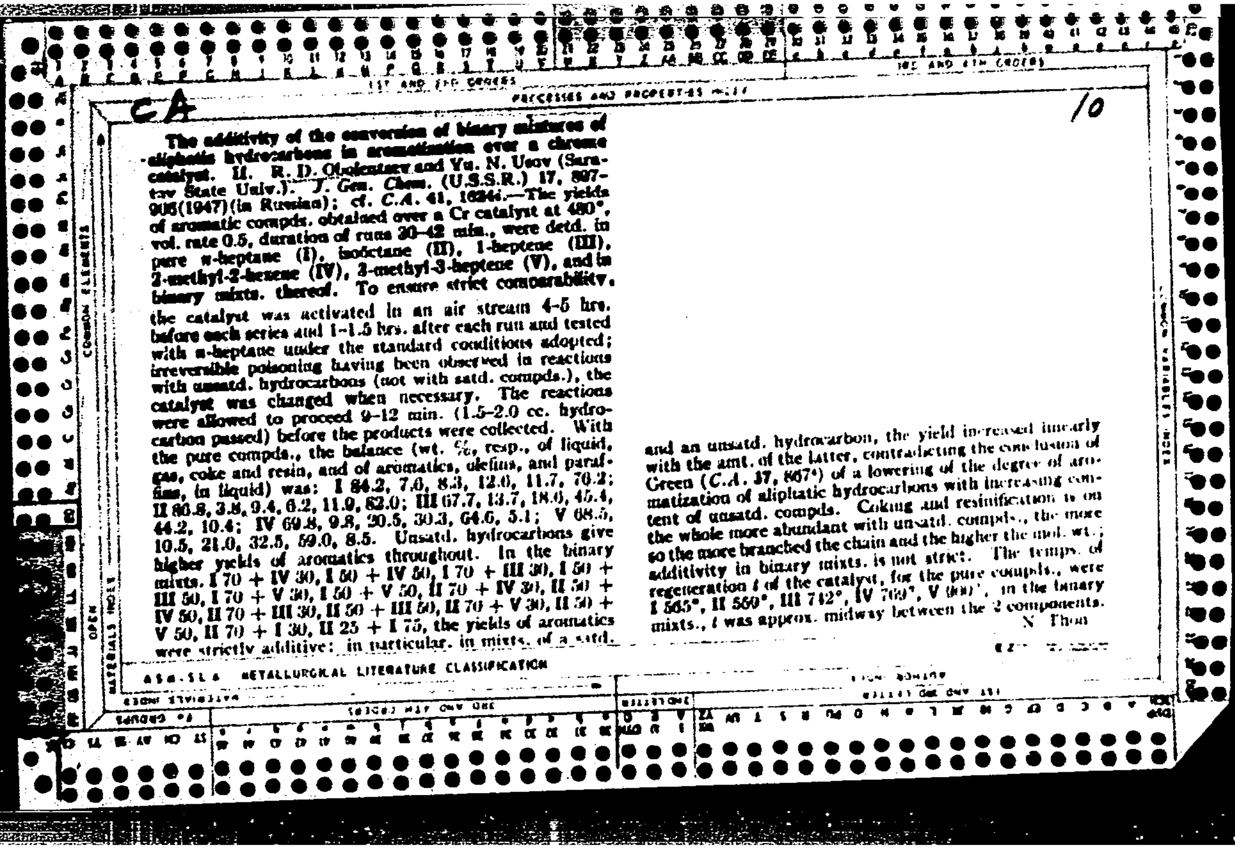
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

22

Removal of mercaptans with slightly alkaline solutions. R. D. Obolentsev and M. I. Dement'eva. *Compt. rend. acad. sci. U.R.S.S.* 51, 621-3(1946). Sulfurous compds. are removed from low-octane Baku 2 gasoline with 2% aq. NaOH contg. admixt. of 3% wood tar just as effectively as with the American process with concd NaOH soln. The effect of various admixts., MeOH 50, Na isobutyrate 1, ethylamine 1, furfurol 1, propylene glycol 50, isovaleric acid 1, propionic acid 1, pyrogallol 0.3%, is given. Syzran gasoline (b. 60-240°) with wood-tar admixt. treatment lost 31% of its total S. The remaining 0.088% consisted of 0.083 mercaptan, the rest H_2S and elementary S. J. A. Ackerman



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10

The additivity of the conversion of binary mixtures of aliphatic hydrocarbons in aromatization over a chrome catalyst. II. R. D. Obolentsev and Yu. N. Usov (Saratov State Univ.). *J. Gen. Chem.* (U.S.S.R.) 17, 897-906(1947)(in Russian); cf. *C.A.* 41, 1624*i*.—The yields of aromatic compds. obtained over a Cr catalyst at 480°, vol. rate 0.5, duration of runs 30-42 min., were detd. in pure *n*-heptane (I), isooctane (II), 1-heptene (III), 2-methyl-2-hexene (IV), 3-methyl-3-heptene (V), and in binary mixts. thereof. To ensure strict comparability, the catalyst was activated in an air stream 4-5 hrs. before each series and 1-1.5 hrs. after each run and tested with *n*-heptane under the standard conditions adopted; irreversible poisoning having been observed in reactions with unsatd. hydrocarbons (not with satd. compds.), the catalyst was changed when necessary. The reactions were allowed to proceed 9-12 min. (1.5-2.0 cc. hydrocarbon passed) before the products were collected. With the pure compds., the balance (wt. %, resp., of liquid, gas, coke and resin, and of aromatics, olefins, and paraffins, in liquid) was: I 84.2, 7.0, 8.3, 12.0, 11.7, 70.2; II 86.8, 3.8, 9.4, 6.2, 11.9, 82.0; III 67.7, 13.7, 18.0, 45.4, 44.2, 10.4; IV 69.8, 9.8, 20.5, 30.3, 64.6, 5.1; V 68.5, 10.5, 21.0, 32.5, 59.0, 8.5. Unsatd. hydrocarbons give higher yields of aromatics throughout. In the binary mixts. I 70 + IV 30, I 50 + IV 50, I 70 + III 30, I 50 + III 50, I 70 + V 30, I 50 + V 50, II 70 + IV 30, II 50 + IV 50, II 70 + III 30, II 50 + III 50, II 70 + V 30, II 50 + V 50, II 70 + I 30, II 25 + I 75, the yields of aromatics were strictly additive; in particular, in mixts. of a satd. and an unsatd. hydrocarbon, the yield increased linearly with the amt. of the latter, contradicting the conclusion of Green (*C.A.* 37, 867⁴) of a lowering of the degree of aromatization of aliphatic hydrocarbons with increasing content of unsatd. compds. Coking and resinification is on the whole more abundant with unsatd. compds., the more so the more branched the chain and the higher the mol. wt.; additivity in binary mixts. is not strict. The temps. of regeneration *t* of the catalyst, for the pure compds., were I 565°, II 560°, III 742°, IV 709°, V 600°; in the binary mixts., *t* was approx. midway between the 2 components.

N. Thon

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

CA 1

Standardization of the procedure for determining the separation efficiency of laboratory rectifying columns. R. D. Obolentsev and A. V. Frost. *Neftyanoe Khoz.* 25, No. 8, [illegible](1947).—A formula is proposed for calcg. the equiv. no. of theoretical plates (n) in lab.-type fractionating columns under operating conditions such that the amt. of product distd. from a known binary mixt. is about equal to its content in the feed. The formula is: $\log x/(x - ay) = a^n \log (1 - a)/[(1 - x) - a(1 - y)]$, where x and y are concns. of the low-boiling component in the feed and in the distillate, resp., and a is the weight of the distillate. A nomogram is described and illustrated. The ratio $n_{[illegible]}/n_{[illegible]}$, the latter being at full feed rate but very small recovery of the distillate, is regarded as the efficiency of the column. The relationships between n, x, y, a, and the relative volatility are shown in examples. Besides using a standardized method for the calcn. of n, it is indispensable to state the type of the column and the method of detn. whenever data on rectification are published.

Bruno C. Metzner

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

OBOLENTSEV, R. D.

Chem
Fuel
(1)

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Organic Chemistry

Isomerizing properties of chromium oxide. R. D. Obolentsev. *Problemy Kinetiki i Kataliza, Akad. Nauk S.S.S.R.* 6, 252-7(1949).—On Cr_2O_3, at 400°, under 10 atm. of H_2, at a space velocity of 0.2 l./l. catalyst/hr., the compn. of the head fraction of a cracking gasoline, originally 54 unsatd., 6 aromatics, 18 naphthenes, and 22% paraffins, became, resp., 4, 23, 28, and 45%, the octane no. dropped only from 72 to 70. After removal (with H_2SO_4) of the unsatd. compds. and the aromatics from both the original gasoline and the catalyzate, the aniline points of the remaining paraffins were, resp., 67.8 and 69.7°, and the Sn points, resp., 141.4 and 152.0°. These changes lead to the conclusion that the hydrogenation has resulted in an isomerization of aliphatic hydrocarbons to 2-methylpentane in the amt. of 20-30%. However, a rise of the aniline point of the hydrogenizate is not always due to an isomerization of paraffins. A fraction b. 90-101°, passed on a chromoaluminosilicate catalyst at 460° at a space velocity of 1, under 40 atm. H_2, changed from the compn. methylcyclohexane 63, methylhexanes 15, and heptane 22%, aniline point 51.4°, to a compn. 13 aromatics, 52 methylcyclohexane, heptanes 35%, aniline point of the paraffinic residue 52.4°; in this instance, the transformation consisted essentially of an aromatization of naphthenes, without significant isomerization of paraffins. This indicates the possibility of carrying out the aromatization, at will, with or without isomerization of the paraffins. Preliminary expts. with 2,2,4-trimethylpentane (I) showed

(Cont'd)

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that a considerable degree of aromatization can be attained at low temps., contrary literature information notwithstanding. The product compn. (% liquid, % gas, % coke and losses, wt.-% aromatics relative to feed, wt.-% relative to catalyzate) was: at 450°, space velocity 0.6:93, 1, 0, 1.8, 2.0; at 510°, space velocity 0.5:75, 10, 15, 14.0, 19.0. On the same catalyst, 2,3,3-trimethyl-1-butene could also be aromatized with relatively little formation of coke and gas; at 510°, 0.6:73, 15, 12, 4.0, 5.0; at 580°, 1.5:74, 21, 5, 7.0, 10.0. In the dehydrogenation of butanes with Cr_2O_3 on alumina, a significant amt. of isomerization (16-23%) accompanies the main reaction. Examples, at 553° (% conversion, % n-C_4H_{10}, Me_3CH, C_4H_8, CH_2:CMe_2 of reactant passed, % C_4H_{10}, Me_3CH, C_4H_8, CH_2:CMe_2 of reactant converted) are: with n-C_4H_{10}, 44.3, —, 3.0, 37.0, 4.3, —, 0.8, 83.5, 0.7; with Me_3CH, 36.4, 3.3, —, 5.0, 28.1, 9.1, —, 13.7, 77.2. At higher temps. the isomerization reactions appear to favor the formation of little-branched or straight-chain alkanes, at a rate comparable to that of the main aromatization or dehydrogenation reactions. The isomerization can be conceived as the result of dehydrogenation with cyclization, followed by hydrogenation of the cycle to a paraffin. It is noteworthy that in the aromatization of I, one could find in the products significant amts. of 2,2,4-trimethyl-3-pentene but no 2,2,4-trimethyl-4-pentene. Consequently, CH_2 and CH groups are dehydrogenated more easily than CH_3. There is an unmistakable analogy between the catalytic actions of Cr_2O_3 and $AlCl_3$.

N. Thon

8-12-57

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

OBOLENTSEV, R. D.

Obolentsev, R. D. "The isomerization of alkanes," Uchen. zapiski (Sarat. gos. un-t im. Chernyshevskogo), Vol. [illegible], Vyp. Khim., 1949, p. 42-115, - Bibliog; p. 110-15

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SO: U-4034, 20 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 16, 1949).

OBOLENTSEV R. D.

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SO: U-4921, 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 16, 1949).

OBOLENTSEV, R. D.

<u>Obolentsev, R. D.</u> - "On the determination of 'xylene' concentration in purified 'light oil' resulting from pyrolysis," Uchen. zapiski (Sarat. gos. un-t im. Chernyshevskogo, Vol. XXI, vyp. Khim., 1949, p. 119-27, - Bibliog: 7 items

SO: U-4934, 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 1[illegible], 1949).

OBOLENTSEV, R. D.

<u>Obolentsev, R. D.</u>- "The stabilization of only partially hydrated carburetor motor fuels," Uchen. zapiski (Sarat. gos. un-t im. Chernyshevskogo), Vol. XXI, vyp. khim., 19 9, [illegible], - Bibliog: 7 items

SO: U-[illegible], 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 16, 1949).

OBOLENTSEV, R. D.

Obolentsev, R. D. and Kuvshinova, N. I. "The catalytic cracking of hydrocarbons. Cracking, in the presence of aluminosilicate catalyzer, or polymers, produced by phosphoric acid polymerization of butane-butylene and penta-amylene fractions," Uchen. zapiski (Sarat. gos. un-t im. Chernyshevskogo), Vol. XXI, vyp. khim., 1949, p. 1[illegible], - Bibliog: p. 153

SO: U-4934, 29 Oct 53, (Letopis 'Zhurnal 'nykh Statey, No. 16, 1949).

CA

10

Reactions of olefinic hydrocarbons in the presence of metal silicate catalysts. II. Depolymerization of triisobutylene on aluminosilicate catalysts. R. D. Obolentsev. *Zhur. Priklad. Khim.* (J. Applied Chem.) 22, 157-71(1949); cf. *Uchenye Zapiski Saratov. Gosudarst. Univ.*, 16 "*Khimiya*" (1948).—Triisobutylene (I), obtained by cold H_2SO_4 polymerization of the butane-butene fraction of cracking gases and distn. of the fraction b. 175.0°, characterized by d^{20} 0.7613, n_D^{20} 1.4328, mol. wt. 167, Br no. 94, and consisting of a mixt. of (α) 2,2,4,6,6-pentamethyl-3-heptene, (β) 2-neopentyl-4,4-dimethyl-1-pentene, (γ) 2,4,4,6,6-pentamethyl-1-heptene, and (δ) 2,4,4,6,6-pentamethyl-2-heptene, in the approx. ratio α:β:γ:δ = 5:1:0.5:0.5, was passed over a synthetic aluminosilicate cracking catalyst, at different space velocities, v in l./l. catalyst/hr., or v' in moles/l. catalyst/hr. Examples of balances, in terms of a "fictitious" time of contact, ω = 1/v, used instead of the true time of contact τ, are: at 200°, ω = 0.1, v' = 63.4, x (yield of gas in moles/mole I passed) = 0.73, compn. of gas (isobutylene, propylene + butylenes, ethylene, H_2, sum of satd. hydrocarbons) 92.9, 2.7, 0.0, 0.0, 4.4; wt. % of liquid products, gaseous products, coke and tar, losses, 50.8, 20.0, 9.6, 10.6%. In the same order, at 200°, ω = 0.30, v' = 15.1, x = 0.82 (89.0, 6.1, 0.0, 0.0, 4.9), 50.5, 27.4, 11.1, 11.0; ω = 0.54, v' = 8.4, x = 0.90 (89.4, 6.6, 0.0, 0.0, 4.0), 45.2, 32.0, 12.3, 10.5. At 300°, ω = 0.11, v' = 41.6, x = 0.92 (94.9, 5.1, 0.0, 0.0, 0.0), —, 32.1, 3.3, —; ω = 0.18, v' = 26.8, x = 1.46 (95.7, 4.3, 0.0, 0.0, 0.0), 32.9, 55.5, 4.6, 7.0; ω = 0.30, v' = 15.0, x = 1.83 (93.6, 6.6, 0.0, 0.0, 0.0) 24.3, 61.2, 3.8, 10.0. At 307°, ω = 0.12, v' = 37.4, x = 2.10 (94.4, 5.6, 0.0, 0.0, 0.0), 26.4, 66.4, 2.2, 5.0; ω = 0.35, v' = 13.1, x = 2.04 (97.2, 2.8, 0.0, 0.0, 0.0), 29.5, 68.6, —. In all cases, the yield of liquid products falls and that of gas and of coke rises with increasing ω, and the curves of yield as a function of ω are of the same type; at low ω, the yields are approx. proportional to it, and become stationary at ω = 0.2-0.3. The curves are well rendered by the equation $dx/d\omega = K_n/x^n$, with K = 10.50, 4.08, and 1.85 at 307, 300, and 200°, resp., β = 21.6, 13.0, and 31.5, resp., and n = 2 at all 3 temps. The const. K_n follows Arrhenius' equation, with log K_n a linear function of $1/T$, giving an activation energy of 6.5 kcal./mole. Highest values of x were attained at 307°, at which temp., at v' = 37.4 and lower, the yield of isobutylene (II) was 70% of the I passed, or 2.10 moles II/mole I passed. At 200°, the highest yield, 0.8 mole II/mole I passed, was attained at ω = 0.4-0.5, i.e. lower than at 307° (ω = 0.2). The compn. of the gas varies but little with the temp. and with ω; with rising temp., the amt. of butylenes increases somewhat. Satd. hydrocarbons in the amt. of 4-5% were detected only in runs at 200°, with CH_4 in the amt. 2.5-3.5%, the rest C_2H_6 and C_3H_8. The yield of liquid products is highest at 200°, lowest at 307°; they are very close at an ω of approx. 0.1, it becomes stabilized at an ω of approx. 0.2-0.4. These products consist, to the extent of 90%, of unsatd. hydrocarbons of mol. wt. 100-150, i.e. of hydrocarbons C_7, C_{10} and higher. With rising temp. and with increasing ω, the yield of II increases and at the same time that of octenes decreases. The octenes produced by depolymerization of I at 200-300° consist mainly of isomers b. 101-7°, whereas the octenes produced at 307° boil in the range 108-15°, i.e., are less branched. The yield of heptenes, at 200-300°, varies little with ω; it decreases with the temp. rising to 307°, and, at that temp. and ω = 0.20-0.35, they disappear altogether. The yields of monomer and of dimers (in moles/mole I passed) are illustrated by the following data: at 200°, ω = 0.19, C_4H_8 0.715, C_8H_{16} 0.251, $C_{12}H_{24}$ 0.082, $C_{16}H_{32}$ 0.032; ω = 0.30, 0.784, 0.231, 0.060, 0.030; at 300°, ω = 0.11, 0.915, 0.200, 0.028, —; ω = 0.25, 1.02, 0.105, 0.040, —. In view of the absence of C_6H_{12}, production of nonenes is ascribed to II + amylene, and, similarly, some decene is produced by dimerization of amylene which, in view of the presence of heptenes, is looked upon as a decompn. product of I; that it is not formed from octene follows from the very low amt. of C_6H_{12}. The most plausible reaction scheme involves decompn. of I into II + C_5H_{10}, the dimer undergoing further depolymerization into II. The latter step is specific for the aluminosilicate catalyst, since depolymerization on natural floridin (Lebedev and Livshits, C. A. 18, 5989) leaves considerable amts. of dimer which is depolymerized only after repeated recycling. Evidently, both the (α) and the (β) isomers can undergo depolymerization. If, in agreement with literature data, one excludes an isomerization of (α) into (β), depolymerization of the (α) trimer can be conceived either as proceeding over 2,4,4-trimethyl-1-heptene, with subsequent depolymerization by the double bond, or over 2,4,4-trimethyl-2-heptene, which depolymerizes over a 4-membered ring. N. Thon

OBLENTSEV, R. D.

PA 52/49T22

USSR/Chemistry - Heptane May 49
Chemistry - Aromatic Compounds

"The Course of Reactions of Contact Aromatization of n-Heptane Over Chrome Catalysts," R. D. Oblentsev, Saratov State U imeni N. G. Chernyshevskiy, 3½ pp

"Dok Ak Nauk SSSR" Vol LXVI, No 2

Aromatization of n-heptane over chrome catalysts has been described in numerous articles and books. However, the relationship between aromatic formation and time of contact is still unknown. Analyzes results obtained by Pitkethly and Steiner ("Trans Farad Soc," Vol XXXV, 979, 1010, 1939) and other

[redacted] [illegible] 52/49T22

USSR/Chemistry - Heptane (Contd) May 49

researches. Deduces equations and performs special experiments which show reaction has an induction period and, consequently, does not conform to equations of classical kinetics. Ratio showing extent of transformation of n-heptane into unsaturated hydrocarbons to extent of transformation into aromatics is practically constant and equal to 0.7 within a contact time range of 1-7 sec. It falls to 0.56 when time of contact is increased to 13 sec. Submitted by Acad V. M. Rodionov, 14 Mar 49.

[redacted] 52/49T22

OBOLENTSEV R. D.,

PA 170T38

USSR/Chemistry - Liquid fuels Nov 50

"IV. Cracking of Certain Weakly Branched Aliphatic Hydrocarbons as Well as of Isooctane and Diisobutylene Over an Aluminum Silicate Catalyst," R. D. Obolentsev, Chair of Chem Conversion of Petroleum and Gas, Saratov State U imeni N. G. Chernyshevskiy.

"Zhur Prik Khim" Vol XXIII, No 11, pp 1223-36

Yield of gas in cracking of olefins is higher than in the case of paraffins, while temperature coefficient of gas formation is lower.

170T38

USSR/Chemistry - Liquid fuels (Contd 1) Nov 50

Extent of cracking of olefins generally grows with molecular weight. Primary reaction is cracking in the case of paraffins and depolymerization in the case of olefins. Methane and hydrogen are of secondary origin. Hydrogen disproportionation increases at higher temperatures, but depends on structure of the hydrocarbon. Cracking of olefin in hydrocarbon solvent which is inert toward the catalyst leads to modified result. Two schemes predominate: (1) cracking ↔ alkylation; (2) dehydrogenation ↔ hydrogenation. Composition of the

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USSR/Chemistry - Liquid fuels (Contd 2) Nov 50

final products is determined by the kinetics of individual reactions and is far removed from equilibrium conditions.

18

CA

Cracking of some little-branched hydrocarbons of the aliphatic series, of isooctane and diisobutylene on an aluminosilicate catalyst. R. D. Obolentsev. *J. Applied Chem. U.S.S.R.* 23, 1299-1312(1950)(Engl. translation).—B. R.
See *C.A.* 46, 4464h.

C. A.

10

Cracking of ethyl acetate on an aluminosilicate catalyst. R. D. Obolentsev and Yu. N. Usov (N. G. Chernyshev State Univ., Saratov). *Doklady Akad. Nauk S.S.S.R.* **71**, 489-92(1950); cf. *C.A.* **42**, 1570h.—Catalyzates of 4 expts. carried out at 400° with a rate of 1 l. AcOEt/1. catalyst/hr., duration of 45, 45, 45, and 15 min., resp., gave the following products on fractionation: fraction up to 70°, Me_2CO (identified by CHI_3 test and as the 2,4-dinitrophenylhydrazone); 70-85°, undecompd. AcOEt; 85-107°, too small for analysis; 107-118°, mainly AcOH (identified as AcOAg). No aldehydes were found. At 250° AcOEt hardly undergoes catalytic decompn. The CO_2 which also forms is probably a product of secondary origin, *i.e.* from AcOH under the effect of aluminosilicate. The scheme $2CH_3CO_2Et \rightarrow 2CH_2{:}CH_2 + 2CH_3CO_2H \rightarrow CO_2 + H_2O + (CH_3)_2CO$ is postulated. It differs from the scheme of Senderens (*C.A.* 2, 2080) for Al_2O_3 catalyst. When *AcOH* was cracked under the same conditions, the compn. of the gaseous product (by vol.) was CO_2 73.5; C_2H_4 0.1; H 0.4; iso-C_4H_8 10; C_3H_6 and n-C_4H_8, 2.3; C_nH_{2n+2} 2.8. The liquid product contained much Me_2CO from which some of the gaseous products, such as iso-C_4H_8, are likely formed. O. and V. obtained the same products from AcOH as did Senderens with Al_2O_3 and aluminosilicate but the reported side products differed; S. obtained CO and no iso-C_4H_8, while O. and V. found iso-C_4H_8 and no CO. It must be assumed that the decompn. of AcOEt over Al_2O_3 proceeds by the scheme established for aluminosilicate, but AcOH over Al_2O_3 decomps. to CO_2, Me_2CO, and H_2O. *Beeswax* was also cracked on aluminosilicate and on clay from Iznik lake. With 30% (by wt. of wax) catalyst and a duration of 5 hrs. at 195-200° and 6 hrs. at 250° the solid products were characterized as follows: from aluminosilicate, sapon. no. 88.9, acid no. 62.1, ester no. 26.8, Br no. 10, m. 37-41°; from clay, the corresponding nos. are 36.4, 23.5, 12.9, 12, 47-52°; those of the original beeswax 104.1, 20.1, 84.0, 1, 63-68°. No gas evolved during the reaction, but in the atm. of the app. was found 0.9% CO_2 from aluminosilicate and 1.6% CO_2 from clay. Of the esters in the wax 68-85% decompd., probably in 2 steps: (1) conversion to acid and unsatd. hydrocarbon, and (2) decarboxylation of the acid and hydrogenation of the unsatd. hydrocarbon. Many of the alcs. of the wax seem to be dehydrated in the process.

Kitty Lux

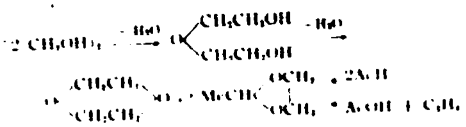
CA 2

Dealkylation of isopropylbenzene on an aluminosilicate catalyst. R. D. Obolentsev and N. N. Gryazev (Chem. Research Inst., N. G. Chernyshev State Univ., Saratov). *Doklady Akad. Nauk S.S.S.R.* 73, 121-4(1950).—In a flow system at 350° (space velocities 0.5-4.0 l./l. catalyst/hr.), 400° (1.0-12.0), and 450° (1.0-18.0), iso-PrPh (I) yields gaseous products consisting mainly of C_3H_6 with some admixt. of C_3H_8; at 350°, there is also some amt. of CH_4, increasing with the contact time τ (up to 4.4 vol. %); at 400-50°, the gas includes also small amts. of H_2, C_2H_4, C_2H_6, C_4H_8, and C_4H_{10}. By fractionation, liquid products contain essentially C_6H_6, and a fraction b. 190-210° identified (by oxidation with $KMnO_4$) as mainly a mixt. of 1,3-(iso-Pr)$_2C_6H_4$ and 1,4-(iso-Pr)$_2C_6H_4$ in the ratio 1:2. Consequently, the main reaction (*a*) I → C_6H_6 + C_3H_6 is accompanied by a dismutation reaction (*b*) 2 I → C_6H_6 + (iso-Pr)$_2C_6H_4$. The extent of (*b*) decreases with the temp. and with τ. The highest amt. of C_6H_6 produced by reaction (*b*) was 20% of the total C_6H_6 (at 350°), the lowest to 2% (at 450°). The rate of the dealkylation is not describable by any classic kinetic equation, but can be described by $\ln[D/(D - x)] = a\tau^b$, where D = max. degree of dealkylation, in %, at the given temp.; x = observed degree of dealkylation; τ = contact time in sec. The parameters a and b are related to the rate w by $w = (100 - \xi)ab\tau^{b-1}$, where ξ = degree of dealkylation at the time τ expressed in % of the max. dealkylation D at the given temp. Exptl. numerical values of D, a, and b, are, at 350°, 33, 0.463, and 0.725; at 400°, 42, 4.0, and 1.296; at 450°, 66, 40.4, and 2.28. Curves of w as a function of τ at 400 and 450° have a distinct max., very sharp at 450°. At 350°, the apparent order of the reaction is close to bimol. ($b \sim 0.68$). The temp. dependence of a and b is expressible by $a = 376 \times 10^{11} e^{-[illegible]/RT}$, $b = 3065 e^{-[illegible]/RT}$. Insofar as the concept of a branched-chain mechanism is applicable under conditions of heterogeneous catalysis, the disappearance of the active intermediate would be a 1st-order reaction at 450°, essentially of the 2nd order at 400°, and of the 2nd or at least partly of the 3rd order at 350°. N. Thon

CA

9

Reactions of ethylene glycol, diethylene glycol, dioxane, and diethylene glycol acetal on an aluminosilicate catalyst. R. D. Obolentsev and N. N. Gryazev (Saratov State Univ.). *Doklady Akad. Nauk S.S.S.R.* **73**, 319-22 (1950).—The following are the material balances (temp., wt. % gas, catalyzate, coke) obtained in flow runs at 1 l./l. catalyst (synthetic Al silicate) hr. Ethylene glycol (**I**) 300°, 1.7, 97.1, 1.2; 400°, 3.4, 91.3, 5.3; diethylene glycol (**II**) 250°, 0.3, 98.3, 1.4; 300°, 2.1, 92.3, 5.6, 350°, 3.8, 90.7, 5.5, 400°, 6.3, 88.0, 5.7; dioxane (**III**) 350°, 3.0, 94.1, 2.5; 400°, 30.8, 51.2, 18.0; ethylene acetal (**IV**) 350°, 16.2, 54.0, 29.8. Yields of the products (in the order **II**, H_2O, **III**, **IV**, C_2H_4, AcOH, AcH, H_2, CO, CH_4, CO_2) in moles/100 moles initial compd., were: **I** (300°) 2.5, 70.0, 40.0, 4.5, 2.5, 0.2, 22.3, 2.0, 0.3, 0.2, 0.1, (400°) 2.3, 76.5, 31.7, 14.4, 6.5, 0.8, 14.4, 1.5, 1.2, 0.8, 0.7; **II** (250°) —, 30.0, 6.7, 13.5, 0.3, 0.1, 12.0, 2.2, —, —, 0.3; (300°) —, 49.9, 11.9, 11.9, 4.5, 2.0, 27.7, 0.3, —, —, 1.4; (350°) —, 88.2, 32.2, 6.5, 10.0, 2.3, 35.0, 0.2, 0.1, 0.4, 0.4; (400°) —, 78.8, 18.5, 10.2, 15.5, 4.1, 17.5, 0.01, 0.4, 0.4, 0.2; **III** (300°) —, —, —, 19.5, 9.5, 8.0, 7.2, 2.5, 3.8, 2.5, 0.7; **IV** (350°) —, —, 19.8, —, 36.4, 12.4, 23.0, 4.1, 1.0, 7.0, 4.9. The data substantiate the reaction scheme



Not included in this scheme are the side reactions of decompn. of AcH into CH_4 and CO, decompn. of HCOH, disproportionation of H_2, etc. The proportions of **III** and **IV** obtained from **I** and **II** vary with the temp. In contrast to Yur'ev, Novitskii and Kukharskaya (cf. *C.A.* **44**, 1020h), no **III** was found in the products of **II** at 200°, only small amts. of AcH. N. Thon

OBOLENTSEV, P., D.,

USSR/Chemistry - Petroleum Jan 51

"Kinetics of Isomerization of n-Butane in Liquid Phase Over Aluminum Chloride," P. D. Obolentsev, Chair of Chem Conversion of Petr and Gases, Saratov State U imeni N. G. Chernyshevskiy

"Zhur Obshch Khim" Vol XXI, No 1, 73-77

Describes isomerization of n-butane in liquid phase over aluminum chloride by generalized kinetic eq linking depth and rate of isomerization and time of contact in dependence on effect of reaction

173T29

USSR/Chemistry - Petroleum (Contd) Jan 51

medium, and not by themselves. Author distinguishes his approach from van't Hoff's "classical kinetics," which arose and grew within framework of idealistic philosophical conceptions.

173T29

OBOLENTSEV, R. D.

USSR/Chemistry - Liquid Fuels May 51

"Kinetics of the Dealkylation of Isopropylbenzene Over an Aluminum Silicate Catalyst," R. D. Obolentsev, N. N. Gryazev, Sci Res Inst of Chem, Saratov State U imeni N. G. Chernyshevskiy

"Zhur Obshch Khim" Vol XXI, No 5, pp 860-868

From examn of kinetic characteristics and individual products of dealkylation of iso-PrC_6H_5 over industrial aluminum silicate catalyst, establishes that basic dealkylation reaction is accompanied by dismutation of iso-PrC_6H_5 by eq: $C_6H_5C_3H_7 = C_6H_6 + C_6H_4(C_3H_7)_2$.

182T35

CA

Kinetics of dealkylation of isopropylbenzene on an alumosilicate catalyst. R. D. Obolentsev and N. N. Gryazev. *J. Gen. Chem. U.S.S.R.* 21, 943-50(1951)(Engl. translation).—See *C.A.* 46, 32

B. R.

BOLENTSEV, R. D.

SSR/Chemistry - Aromatization Aug 51

"Conversion of Hydrocarbons in the Presence of Oxide Catalysts. III. The Role of Separate Conversions in the Aromatization of Paraffinic and Olefinic Hydrocarbons Over Chromium Catalysts," R. D. Obolentsev, Yu. N. Usov, Chair of Chem Conversion of Petroleum and Gas, Saratov State U imeni I. G. Chernyshevskiy

"Zhur Obshch Khim" Vol XXI, No 8, pp 1438-1452

Aromatized n-heptane (I) and 2-methylhexene-2 (II) over Cr catalyst at 480°C to form aromatics, coke, gases, with olefins (from I) and paraffins (from II) as by-products. Only I has induction period. Reaction of II is close to bimol type. Found eq for

188T14

USSR/Chemistry - Aromatization (Contd) Aug 51

dependence of aromatic formation on contact time. Amt of H_2 evolved confirmed similarity between Cr and aluminosilicate catalysts. Showed dependence of sep reactions of conversion of 2,2,4-trimethylheptane, heptene-1, I, and II on temp in limits 450-510° and calcd corr activation energies and temp coeffs of reaction rates.

188T14

OBOLENTSEV, P. D.

191T37

USSR/Chemistry - Liquid Fuels Sep 51
Synthetic Elastomers

"Conversion of Olefinic Hydrocarbons in the Presence of Metal Silicate Catalysts. III. Conversion of Certain Unsaturated Hydrocarbons With a Quaternary Carbon Atom on an Aluminosilicate Catalyst," P. D. Obolentsev, N. N. Gryazev, Sci Res Inst Chem, Saratov State U imeni N. G. Chernyshevskiy

"Zhur Obshch Khim" Vol XXI, No 9, pp 1588-1602

Investigated for the 1st time conversion of 3,3-dimethylbutene-1 (I), 4,4-dimethylpentene-1 (II),

191T37

USSR/Chemistry - Liquid Fuels (Contd) Sep 51

2,3,3-trimethylbutene (III) over aluminosilicate catalyst at 300-450°C. Basic forms of conversion were disproportionation of H, polymerization, isomerization, coke-formation. Decompn of I, III, and very probably 2,4,4-trimethylpentene-2 (hydrocarbons of the type $(CH_3)_3C-CR=CR_2$, where R = H or CH_3) is explained by intermediate formation of 4-membered rings according to scheme proposed by S. V. Lebedev for depolymerization of decene.

191T37

OBOLENTSEV, R. D., ~~Student~~

USSR/Chemistry - Petroleum
Catalysts

Oct 51

"Conversion of Hydrocarbons in the Presence of Oxide Catalysts. IV. Dehydrogenation of Butanes Over a Chromium Catalyst," R. D. Obolentsev; K. A. Vershinina, Ye. V. Skvortsova, Students, Chair of Chem Processing of Petroleum and Gases, Saratov State U imeni N. G. Chernyshevskiy

"Zhur Obshch Khim" Vol XXI, No 10, pp 1800-1806

Dehydrogenation of n-butane and isobutane at temps in 500-550° C temp range over Cr catalyst prepd by copptn of Al, Cr hydroxides yielded

194T26

USSR/Chemistry - Petroleum (Contd)

Oct 51

H2, C butenes, isobutene, probed that Cr catalyst has good isomerizing properties. Proposed eqs for dependence of extent and rate of dehydrogenation of n-butane and isobutane on time of contact at 553°, at which temp reaction has induction period. Isomerization capacity of Cr catalyst makes E. Harrington, E. Rideal, and S. Ye. Rayk's aromatization scheme doubtful.

194T26

USSR/Chemistry - Petroleum

21 Oct 51

"Transformation of Esters Under the Influence of Aluminosilicates," R. D. Obolentsev, Yu. N. Usov, M. G. Voyskovskaya, Saratov State U imeni N. G. Chernyshevskiy

"Dok Ak Nauk SSSR" Vol LXXX, No 6, pp 889-892

Natural clays act as catalysts in a way similar to aluminosilicates on the following esters: ethyl formate, ethyl acetate, ethyl benzoate, methyl benzoate, and isoamyl acetate, transforming them in part into unsatd hydrocarbons. Transformations of

21T37

this type under the catalytic action of clay and the effect of high temps may have played a role in the formation of natural petroleum occurrences.

21T37

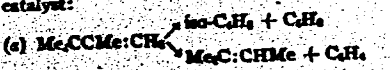
OBOLENTSEV, R.D.

OBOLENTSEV, R. D.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Organic Chemistry

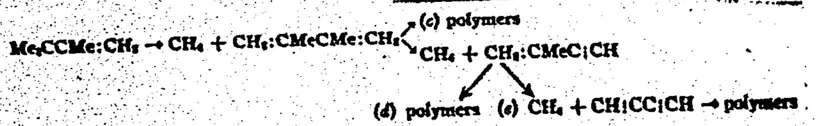
Aromatization of 2,3,[illegible] on a chromium catalyst. R. D. Obolentsev and N. I. Kuvshinova (Saratov [illegible] Univ.). Zhur. Obshchei Khim. 22, 2181-7 (1952); cf. preceding abstr.—The previously noted possibility of catalytic aromatization of a hydrocarbon with as few as 4 C atoms in the longest chain was demonstrated in the instance of 2,3,3-trimethyl-1-butene, on Cr_2O_3 on alumina (catalyst *A*), and on unsupported Cr_2O_3 (catalyst *B*). Balances of the expts. are: (I) catalyst *A*, 580°, space velocity 3 l./l. catalyst/hr., duration 15 min.; wt.-% gas 31.3, liquid 37.8, coke 30.9; yield of gas, in moles/100 moles reactant, ΣC_nH_{2n+2} 76.6, ΣC_nH_{2n} 29.8, $\Sigma C_3H_6 + C_4H_8$ 15.6, ΣC_3 15.6, ΣC_4 18.8, H_2 107.5, CH_4 57.0, C_2H_6 12.0, C_2H_4 3.0, C_3H_8 4.8, C_3H_6 10.8, ΣC_4H_{10} 2.8, C_4H_8 4.8, Me_3CH, 11.3, total gas yield 215; mole-% reacted to $\Sigma C_3 + C_4$ 17, to $\Sigma C_5 + C_6$ 15, to aromatics 8; (II) *A*, 580°, 1.2, 23; 52.0, 10.7, 37.3; 110.3, 23.9, 11.2, 13.5, 14.3, 145.0, 67.0, 31.4, 7.9, 7.3, 6.2, 4.5, 5.0, 4.8, 281; 14, 39, 6; (III) *A*, 530°, 3, 16; 24.4, 63.9, 11.7, 35.8, 17.8, 8.2, 10, 10.8, 59.5, 18.8, 10.8, 3.2, 4.2, 5.3, 2.0, 2.4, 6.4, 114; 10, 14, 5; (IV) *B*, 560°, 3, 30; 21.4, 74.1, 4.5, 28.8, 22.1, 10.8, —, —, 22.0, —, —, 1.3, —, —, —, —, 10.0, 74; —, —, 8; (V) *B*, 580°, 1.6, 50; 38.2, 50.0, 11.8, 85.6, 39.0, 17.1, —, —, 34.0, —, —, 10.2, —, —, —, —, 11.7, 160; 19, 31, 13; (VI) *B*, 550°, 1.0, 90; 18.2, 63.6, 18.2, 30, 16.3, 6.6, —, —, 40.0, —, —, 2.6, —, —, —, —, 7.1, 86; —, —, 10; (VII) *B*, 510°, 1, 90; 14.9, 72.7, 12.4, 29.6, 3.2, 2.0, —, —, 11, —, —, 1.2, —, —, —, —, 0.0, 44; —, —, 4. The compns. of the liquid products, in wt.-%, are, (I) unsatd. 76.1, aromatics 20.9, satd. residue 3.0; (II), —, 50.7, —; (III) 79.3, 7.5, 12.2; (IV) 90.0, 10.0, 0.0; (V) 74.4, 24.6, 0.8; (VI) 85.0, 15.0, 0.0; (VII) 93.0, 5.0, 2.0. The compn. of the gaseous products, in vol. %, (I) H_2 50, C_2H_6 1.4, C_2H_4 5.0, C_3H_8 2.2, iso-C_4H_8 5.2, CH_4 20.6, C_3H_6 5.6, C_4H_8 2.2, ΣC_4H_{10} 1.3; (II) 51.6, 2.6, 2.2, 1.6, 1.7, 23.6, 11.2, 2.5, 1.6; (III) 5[illegible].9, 2.8, 5.6, 2.1, 5.6, 16.5, 9.5, 3.7, 1.7; (V) 21.4, 6.4, 6.2, 3.8, 7.3, 35.7, 13.1, 3.4, 1.3; (IV) H_2 30.3, C_2H_6 1.8, $C_2H_4 + C_3H_8$ 14.6, iso-C_4H_8 14.0, $CH_4 + C_3H_6$ +

$C_4H_8 + \Sigma C_4H_{10}$ 35.5; (VI) 46.3, 8.0, 7.6, 8.3, 34.9; (VII) 25.3, 2.7, 4.6, 0.0, 67.4. These product compns. can be accounted for by decompn. schemes analogous to those proposed (*C.A.* 46, 32c) for the reaction on an aluminosilicate catalyst:



$$(a)\ Me_3CCMe{:}CH_2 \begin{cases} \nearrow \text{iso-}C_4H_8 + C_3H_6 \\ \searrow Me_2C{:}CHMe + C_2H_4 \end{cases}$$

with the products undergoing partially isomerization, hydrogenation, and dehydrogenation; the large amt. of CH_4 is accounted for by demethanization according to scheme (*b*) $Me_3CCMe{:}CH_2 \rightarrow CH_4 + Me_3CC\vdots CH \rightarrow$ polymers;



$$\begin{tikzcd}[column sep=small] Me_3CCMe{:}CH_2 \arrow[r] & CH_4 + CH_2{:}CMeCMe{:}CH_2 \arrow[r] \arrow[dr] & (c)\ \text{polymers} & \\ & & CH_4 + CH_2{:}CMeC\vdots CH \arrow[dl] \arrow[d] & \\ & (d)\ \text{polymers} & (e)\ CH_4 + CH\vdots CC\vdots CH \arrow[r] & \text{polymers} \end{tikzcd}$$

The test of these schemes consists in comparison of the observed yield of CH_4 and the yields calcd. in proportion to the yields of coke corresponding to the schemes *bc*, *d*, and *e*. The actual yield of CH_4 in V is intermediate between that called for by *d* and *e*, and in I, II, III, it is intermediate between *bc* and *d*. The difference between the amt. of H_2 spent on hydrogenation of alkenes and that evolved in aromatization, representing the H_2 produced in secondary dehydrogenations, was, in I, II, III, V, resp., 103, 170, 62, 24 moles/100 moles $Me_3CCMe{:}CH_2$; it is strikingly low in V which, judging by the amt. of CH_4, should correspond to schemes *d*, *e*, and relatively high in I, II, which should correspond more nearly to *bc* and *d*. This is taken to indicate that the coke is formed mainly in simultaneous processes of formation and dehydrogenation of polymers, certainly not through condensation of the aromatics. The decompn. expressed by scheme *a* is assumed to take place over an intermediate formation of 2,2,3-trimethylcyclobutane which, following a scheme of Dem'yanov, can arise through ring expansion of *tert*-butylcyclopropane, produced by hydrogenation of a primarily formed *tert*-butylcyclopropene. Catalyst *B* produces deeper aromatization than *A* in longer contact times; in short contact time, the difference disappears. The yield of coke is about 3 times as high on *A* as on *B*. On *A*, sharp shortening of the contact time results in marked decrease of the decompn., suppression of secondary dehydrogenations, and decrease of the degree of demethanization. Lowering of the temp. acts in the same direction as a shortening of the contact time.

N. Thon

9-13-54

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OBOLENTSEV, R.D.

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Chem

Aromatization of 2,3,3-trimethyl-1-butene on a chromium catalyst. R. D. Obolentsev and N. I. Kuyshinova. *J. Gen. Chem. U.S.S.R.* 22, 2237–42(1952)(Engl. translation).—See *C.A.* 48, 1930*i*. H. L. H.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

OBOLENTSEV, P. D.

"The Physical Constants of Hydrocarbons in Liquid Fuels and Oils," Gostoptekhizdat, 1953.

OBOLENTSEV, R.D.

[illegible] masel (Handbook of Hydrocarbons. Phys. Constants Hydrocarbons, Liquid Fuels, and Oils). 2nd ed. Moscow: Gostoptekhizdat. 1953. 445 pp. 10 R. 50 Kop. Reviewed in *Neftyanoe Khoz.* 32, No. 6, 92(1954).

OBOLENTSEV, R.D.

USSR

Transformation of hydrocarbons in the presence of oxide catalysts. Aromatization of 2,2,4-trimethylpentane over chromium and molybdenum catalysts. R. D. Obolentsev, Yu. N. Usov, and V. V. Muzovskii (N. G. Chernyshevskii State Univ., Saratov). *Sbornik Statei Obshchei Khim.* 2, 1483-92(1953); cf. *C.A.* 48, 1930*i*.—Aromatization of 2,2,4-trimethylpentane over Cr and Mo oxide catalyst at atm. pressure and 510° or 550° with space velocity 0.5 and 0.7 was studied. Aromatization in this case occurs selectively: over Cr catalyst *p*-xylene forms, while over Mo catalyst *m*-xylene forms, in 18% and 8% yields, resp. The main reaction is formation of butylenes and coke, which reaches 68-70% of the reacted starting material. The catalyzate from Mo catalyst contained some 70% aromatics as MePh and C_6H_6, which form by aromatization of demethylation products. The initial products are believed to be cyclic C_8H_{16}, iso-C_4H_8, iso-C_4H_{10}, C_6H_{14} and C_7H_{16}; the process proceeds then to dehydrogenation reactions; participation of cyclopropane intermediates is indicated.

G. M. Kosolapoff

USSR/Chemistry OBOLONTSEV, R. D

FD-1594

Card 1/1 : Pub. 41-15/18

Author : Obolontsev, R. D.; Rozhdestvenskiy, V. P.; Yen'kov, Yu. V. and Usov. Yu. N.; Sazatov

Title : Obtaining hydrogen by the catalytic conversion of natural gas with water vapor

Periodical : Izv. AN SSSR. Otd. tekh. nauk 8, 133-146, Aug 1954

Abstract : Investigates manufacture of hydrogen by means of catalytic conversion of natural gas with water vapor. Studies kinetic laws of methane (natural gas) conversion process realizable on laboratory equipment of the flow type in the presence of typical industrial nickel catalyst. Selects optimum procedure, on basis of laboratory data, for industrial equipment. Diagram; tables; graphs. Thirty-one references; 23 USSR.

Institution : Saratov State University imeni N. G. Chernyshevskiy, Bashkir Branch, Academy of Sciences USSR

Submitted : August 7, 1954

Obolentsev, R.D.

USSR/Chemistry - Condensation

Card 1/1 Pub. 151 - 12/38

Authors : Obolentsev, R. D.; Usov, Yu. N.; and En'kov, Yu. V.

Title : Condensation of aniline with glycerin, paraldehyde and acetylene over $Al_2(SiO_3)_3$

Periodical : Zhur. ob. khim. 24/2, 252-255, Feb 1954

Abstract : The principle possibility for direct synthesis of quinoline, quinaldine, and ethylaniline through the condensation of aniline with glycerin, paraldehyde and acetylene in vapor phase over an aluminum silicate catalyst, is discussed. The catalytic effect of $Al_2(SiO_3)_3$ in above mentioned synthesis was found to be analogous to the catalytic effect of Al_2O_3. It was established that $Al_2(SiO_3)_3$ causes the dehydration of the glycerin into acrolein, and the condensation of the aniline with glycerin or paraldehyde which is followed by the separation of the hydrogen and the formation of intermediate products - acrolein or crotonaldehyde. The mechanism of condensation over $Al_2(SiO_3)_3$ is explained. Thirteen references: 12-USSR and 1-German (1904-1951). Table; graph.

Institution : The N. G. Chernishevskiy State University, Saratov

Submitted : September 16, 1953

AID 349 - I

Subject : USSR/Engineering

Card : 1/2

Author : Tilicheyev, M. D.

Title : Review of the handbook on hydrocarbons: "Physical Constants of Hydrocarbons of Liquid Fuels and Oils," by P. D. Obolentsev, 2nd ed., 1953.

Periodical : Neft. Khoz., v. 32, #5, 92-95, My 1954

Abstract : The reviewer favorably comments on the increased data for hydrocarbons (from 626 to 1323) in comparison with the first edition and the greater number of references (from 476 to 597). The data given for most materials were obtained from original sources. However, a few references were presented from secondary sources, which differ by decimal points from original values. A number of data were obtained from the work of American investigators like S. A. Board, F. L. Howard, Fred V. Rossini and others.

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

AID 349 - I

Neft. Khoz., v. 32, #5, 92-95, My 1954. (additional card)

Card : 2/2

Institution : None

Submitted : No date

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

3234. CATALYTIC AROMATIZATION OF THE GASOLINE FRACT[illegible]

Obolentsev, R.D. and Usov, Yu.N. [illegible]
Saratov Univ.), [illegible]
Chem., Moscow), 1955, (19), [illegible] abstr. in [illegible]
(First [illegible]

[illegible] sulphur, tar or paraffin [illegible] of the gasoline fract[illegible]

[illegible] and the process is of the 1st order [illegible]
Extrapolation of the log k [illegible]
leads to the [illegible] to higher temp [illegible]

OBOLENTSEV, R. D

✓ **Kinetics of catalytic conversion of methane with steam.** R. D. Obolentsev and V. P. Rozhdestvenskii (*Zh. prikl. Khim.*, 1950, 23, 1861—1865).—The equation $-(d[CH_4]/dt) = k.[CH_4].[H_2O]/(A[H_2] + [H_2O])$ was applied to the catalytic conversion of CH_4 with steam over Ni at 400—700° with ratio of steam to methane from 3 : 1 to 1 : 1; results were not entirely satisfactory. A. L. B.

Distr: 4E4j

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Obelentsev, R.D.

Chromatographic separation of isomeric organosulfur compounds with the aid of radioactive sulfur. R. D. Obolentsev, B. V. Aivazov, and S. V. Netupskaya. *Proc. Acad. Sci. U.S.S.R., Sect. Chem.* 100, 55-7(1955)(Engl. translation).—See *C.A.* 50, 13718*i*. B. M. R.

Chem

3

Obolentsev, R. D.

USSR/ Chemistry

Card 1/1 Pub. 22 - 29/54

Authors : Obolentsev, R. D.; Ayvazov, B. V.; Netupskaya, S. V.

Title : Chromatographic cleavage of isomeric sulfures of organic $C_8H_{18}S$ compounds through the application of radiosulfur

Periodical : Dok. AN SSSR 106/2, 283-285, Jan 11, 1956

Abstract : It is known that petroleum fractions contain isomeric organosulfureus compounds and the possibility of chromatographic cleavage of these compounds was investigated. Isomers of n-octylmercaptan, di-n-butylsulfide and diisobutylsulfide, which have a molecular formula $C_8H_{18}S$ and a boiling point similar to that of petroleum ligroin fractions, were selected as the objects of this investigation. Results obtained are described. Four references: 3 USA and 1 USSR (1944-1955). Table; graphs; drawing.

Institution : Acad. of Sc., USSR, Bashkir Branch, Department of Chemistry

Presented by: Academician A. V. Topchiyev, July 1, 1955

OBOLENTSEV, R.D.; NETUPSKAYA, S.V.; MASHKINA, A.V.; GLADKOVA, L.K.

The chemistry of organic sulfur compounds of the type encountered in petroleums and petroleum products. Izv. vost. fil. AN SSSR no.10: 60-67 '57. (MIRA 10:11)

1. Bashkirskiy filial AN SSSR.
(Sulfur compounds) (Petroleum)

OBOLENTSEV, R. D.

OBOLENTSEV, R.D.; AYVAZOV, B.V.

Chemistry of sulfur organic compounds occurring in petroleum and petroleum products. Report No.2: Isotherms of the adsorption of some mercaptans, disulfides and sulfides on silica gel. Izv. vost. fil. AN SSSR no.12:54-67 '57. (MIRA 11:1)

1. Bashkirskiy filial AN SSSR.
(Sulfur organic compounds) (Adsorption) (Silica)

Determination of elementary sulphur in petroleum and petroleum products by a polarographic method. [illegible] and A. [illegible] Ratovskaya. (Chemistry [illegible] Acad. Sci. U.S.S.R. [illegible] 12 (1), 134–138. In the diffusion current [illegible] that equation [illegible] the value [illegible] for the sulphur wave is constant and [illegible] petroleum fractions of similar boiling ranges [illegible] temp. range for the [illegible] increased. It is suggested that the [illegible] may vary in different fractions. The polarographic determination of S is sensitive to from [illegible] to 0·005%, [illegible] according to the nature of the distillate. [illegible] but not aliphatic sulphides and disulphides interfere with the determination [illegible]

— [illegible] Smith

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4E3d

4E2c

N3 1/1

"APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5

OBOLENTSEV, R.D.

AUTHOR OBOLENTSEV R.D., Ayvazov B.V. PA - 3159

TITLE β-Butylthiophane, isolated from Petroleum occurring in the Tuymasy coal-bearing Beds.
(β-butiltiofan, vydelennyy iz nefti uglenosnoy svity Tuymasinskogo mestoroshdeniya.- Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 3, pp 614-615 (U.S.S.R.)

Received: 6/1957 Reviewed: 8/1957

ABSTRACT Mineral oil was subjected to anisothermal rectification in vacuum. On this occasion the temperature of the cube was constant and equal to 135 ± 0,5° pressure, however, was reduced from that of the atmosphere to 0,5 torr. During the chromatographing process three chromatographic filtrates were collected. The first filtrate was a mixture of paraffin- and naphtene-hydrocarbons which did not contain sulphur-organic compounds. The second filtrate was an intermediate product with 1,31 % total volume of sulphur. The third filtrate was a mixture of aromatic hydrocarbons and sulphur-organic compounds after acetone had been distilled off. The third filtrate was subjected to a second chromatography under the same conditions as the fraction at 196 - 214°. The second filtrate was solved in isoctan and subjected to further

CARD 1/2

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

AUTHORS: Obolentsev, R. D., Ayvazov, B. V. 20-114-4-34/63

TITLE: On the Chromatographic Liberation of Aromatic Hydrocarbons From Their Mixture With Organosulphur Compounds (K voprosu o khromatograficheskom vydelenii aromaticheskikh uglevodorodov iz ikh smesi s seraorganicheskimi soyedineniyami)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 803-806 (USSR)

ABSTRACT: Numerous attempts to isolate aromatic hydrocarbons free of organosulphur compounds from sulphurous petroleums and their products by adsorbents such as silicagel and alumogel, were frustrated. In order to determine the conditions of a chromatographic liberation of aromatic hydrocarbons from their mixture with organosulphur compounds, which form part of the ligroin-kerosene distillates, the authors tried a number of adsorbents of home product (silicagel, aluminumoxide and activated charcoal). The experiments were performed with artificial mixtures. Technical isooctane was used as solvent. For measuring the adsorption efficiency they chose the method of direct chromatography. The values of specific adsorption vary widely and are dependent on the quality of the adsorbents and also on that of the adsorbed substances. In a number of cases, the specific ad-

Card 1/4

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sorption of aromatic hydrocarbons differs from that of organosulphur compounds. As an example there served the chromatographic separation of a complex mixture of aromatic hydrocarbons and organosulphur compounds, for the case that the adsorption isotherms do not overlap and the mutual influence of the mixture components is lacking. By the use of different adsorbents and by the repeated application of chromatography one can obtain a complete separation of the chromatographed mixture. One of these variants is illustrated by fig. 1. The artificial mixture consisted of: butylbenzene, naphthalene, α- methylnaphthalene, di-n-nonylsulfide, isohexylphenylsulfide, di-n-butyldisulfide and benzylmercaptan, which were dissolved in technical isooctane. The results of chromatography are shown in tab. 2. They indicate an incomplete chromatographic separation of the said mixture. Comparatively small yields of liberated components may be explained by the consumption of the substance in analysis. Only some compounds were isolated in a pure state.The failure of a clean isolation had been foreseen in the diagram of fig. 1. The non-adequacy of the diagram with the final results may be explained by the overlapping of the adsorption isotherms and perhaps by the mutual influence of the components

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001237710014-5"

On the Chromatographic Liberation of Aromatic Hydrocarbons From Their Mixture With Organosulphur Compounds 20-114-4-34/63

to be separated. For that very reason those isotherms of the greatest possible number of the above-mentioned compounds should be studied. The liberation of n-butyl benzene from a mixture of di-n-butylsulfide, di-n-butyl disulfide and benzenemercaptan was obtained chromatographically under analogous conditions over silicagel (trade-mark ACM) by a solution of acetone in technical isooctane. The chromatogram in tab. 2 convincingly indicates the possibility of the above-mentioned isolation and perhaps also of such an isolation from analogous mixture of organosulphur compounds. Under analogous conditions an experiment with the fraction 194-214°C of Tuymaz-petroleum was carried out. A considerable number of the aromatic hydrocarbons may be liberated without admixture of organosulphur compounds. The results prove that it is possible to separate chromatographically mixtures of aromatic hydrocarbons from organosulphur compounds, in artificial mixtures as well as in a small fraction of the sulphurous petroleum. Further systematic investigations of this problem seem to be necessary. There are 3 figures, 2 tables, and 3 references, 1 of which is Soviet.

Card 3/4