"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

SOV/120-59-1-29/50

AUTHORS: Semerchan, A.A., Vereshchagin, L.F., Isaykov, V.K., Firsov, A.I.

TITLE: A Hydraulic Installation for the Production of a Jet of Liquid Moving with Ultrasonic Speed (Gidravlicheskaya ustanovka dlya polucheniya struy zhidkosti sverkhzvukovoy skorosti)

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 1, pp 121-125 and 1 plate (USSR)

ABSTRACT: Figs 1 and 2 show a photograph and the general arrangement of the hydraulic installation. The hydraulic compressor is brought into motion by the MAShR-85/6-0 electrical motor (240 kW, 1000 rpm). From the compressor the liquid passes on to a "receiver" with a nozzle through which the liquid is ejected into the atmosphere. The pressure behind the nozzle is 2000-25 000 atm and the speed of the liquid jet is 600-650 m/sec. To achieve this a special high pressure hydrocompressor has been built and is shown diagrammatically in Fig 4. The size of the hydrocompressor is 1100 x 680 x 500 mm^3, the working pressure is 2000 atm, consumption 1500-2500 l/hour, number of cylinders = 1, number of excursions of the piston 1000 per minute, diameter of the piston 22, 27 and 33 mm and the distance through which the piston moves is 70 mm. The high pressure hydrocompressor consists of two main parts, namely, a crankgear and a high pressure cylinder (Fig 5). The

Card 1/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

SOV/120-59-1-29/50

A Hydraulic Installation for the Production of a Jet of Liquid Moving with Ultrasonic Speed

high pressure cylinder consists of a thick walled container 5 in which the liquid is compressed. It also includes a pressure valve 4 (shown in greater detail in Fig 6) and inlet valves 3, 6 . 7 is the compressing piston. The form of the nozzle is shown in Fig 8. The system has been used with glycerine (Fig 10) and water (Fig 11). There are 10 figures and 3 Soviet references.

ASSOCIATION: Laboratoriya fiziki sverkhvysokikh davleniy AN SSSR (Laboratory for Physics of Ultrahigh Pressures, Academy of Sciences, USSR)

SUBMITTED: February 1, 1958.

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

MASHKOVICH, M.I.; FIRSOV, A.I.

Heat conductivity of semiprocessed chemical products of wood. Gidroliz. i lesokhim. prom. 16 no.6:22-23 '63. (MIRA 16:10)

1. TSentral'nyy nauchno-issledovatel'skiy i proyektnyy institut lesokhimicheskoy promyshlennosti.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ANUCHIN, P.I.; FIRSOV, A.I.; MIKHALYUK, G.F.

Corrosion resistance of various copper types in acetic acid solutions. Gidroliz. i lesokhim. 18 no.2:12-14 '65. (MIRA 18:5)

1. TSentral'nyy nauchno-issledovatel'skiy i proyektnyy institut lesokhimicheskoy promyshlennosti.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACC NR: AP6035730 (A) SOURCE CODE: UR/0413/66/000/019/0094/0094

INVENTOR: Al'ftan, E. A.; Deyanova, S. V.; Firsov, A. M.; Miklashevskiy, S. A.; Afonina, L. G.; Mednikov, M. M.

ORG: none

TITLE: Thermocouple. Class 42, No. 186733

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 19, 1966, 94

TOPIC TAGS: thermocouple, microthermocouple, temperature instrument

ABSTRACT: This Author Certificate introduces a thermocouple (see Fig. 1) containing a wire surrounded by a metal layer, which is isolated from the wire by an insulating layer, so the metal layer contacts the wire only at the tip. To attain

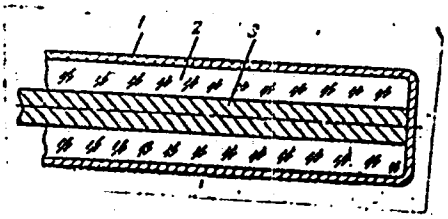

Fig. 1. Longitudinal section through thermocouple

1 - Metal layer; 2 - glass insulation; 3 - microwire.

Card 1/2

UDC: 536.532-181.4002.4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACC NR: AP6035730

microminiaturization of the thermocouple, the outer metal layer is deposited in the shape of a cylinder on the glass-insulated microwire. Orig. art. has: 1 figure.

SUB CODE: 13, 14/ SUBM DATE: 28Jun65/ ATD PRESS: 5106

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

5(4)

AUTHORS: Tsvetkova, V. I., Firsov, A. P., Chirkov, N. M.

SOV/20-124-1-39/69

TITLE: The Determination of the True Constant of Rates in the Decomposition of Aliphatic Alcohols (Opredeleniye istinnykh konstant skorostey pri raspade alifaticheskikh spirtov)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 139-141 (USSR)

ABSTRACT: In acid-catalytic transformations the basicity of the molecules of the reagent and the reactivity of the protonized forms are the most important factors that influence the course taken by reactions. Investigation of these factors is one of the main problems in the theory of acid catalysis. Previous papers dealing with this subject are dealt with in short. Works hitherto carried out in connection with the reactivity of alcohols have, according to the authors' opinion, the disadvantage that reaction rates are compared at different concentrations of the reacting particles. In order to avoid this mistake, the authors chose solutions of HCl in waterless alcohols as experimental objects. In these solutions only the solutions of alcohol are, of course, protonized. In the case

Card 1/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

of sufficient dilution, the HCl-molecules are nearly totally dissociated, and therefore the concentration of the ions of alcoxonium (alkoksoniy) will in practice be equal to the stoichiometric concentration of the acid. Under the conditions prevailing in this case, only alkyl-halides are formed by the dehydration of the alcohols as end products. The reactions occurring in the systems investigated can be described by the scheme $ROH + HCl \rightleftarrows ROH_2^+Cl^- \rightleftarrows ROH_2^+ + Cl^-$. In diluted solutions equilibrium is shifted to the right. It further holds that $ROH_2^+ \xrightarrow{k_1} R^+ + H_2O$ (slow), $R^+ + Cl^- \longrightarrow RCl$ (fast), $ROH_2^+ + Cl^- \xrightarrow{k_2} RCl + H_2O$. The following aliphatic alcohols were used for experimental purposes: ethyl-n-propyl-alcohol, i-propyl-alcohol, n-butyl-alcohol, i-butyl-alcohol, and tertiary butyl alcohol. The investigation was carried out at 65 - 95° and at various initial concentrations of the HCl (from 0.03 to 1.5N) by means of the usual ampoule method. A

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

The Determination of the True Constant of Rates in the Decomposition of Aliphatic Alcohols SOV/20-124-1-39/69

table by way of example shows the results for n-butyl-alcohol. Analogous results were obtained also for other alcohols investigated in this connection. With the investigated experimental conditions prevailing, the monomolecular mechanism predominates. For various alcohols a diagram shows the dependence of the constants found on the temperature for the initial HCl concentration ~0.03. The activation energies of most of the alcohols investigated did not differ essentially from one another. Only in the case of isobutyl-alcohol activation energy is considerably lower. It may be that in this case the reaction develops according to another and more complicated mechanism, and the values found for the constants perhaps do not correspond with the true values. The considerable differences between alcohol dehydration rates in aqueous acid solutions are essentially determined by their different degree of protonization. There are 1 figure, 2 tables, and 13 references, 6 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute for Chemical Physics of the Academy of Sciences, USSR)

Card 3/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

S/076/60/034/009/032/041XX
B020/B056

AUTHORS: Tsvetkova, V. I., Firsov, A. P., and Chirkov, N. M.

TITLE: Determination of the True Constants of the Decay Rate of Alkoxonium Ions in the Interaction Between Aliphatic Alcohols and Hydrogen Chloride

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9, pp. 2066-2074

TEXT: It was the purpose of the present work to determine the true constants of the decomposition rate of alkoxonium ions of a series of aliphatic alcohols: ethyl-, n-propyl-, isopropyl-, n-butyl-, iso-butyl-, and tert-butyl alcohol, and thus also of the reactivity of these ions. For this purpose, the formation rate of alkyl halides for HCl-solutions in water-free alcohols was investigated, viz. at various HCl-concentrations (from 0.03 to 1.5 N) in the temperature interval of from 65 to 95°C. The investigations were carried out in ampoules which had been placed into a liquid thermostat, whose temperature was kept constant with an accuracy of ±0.2°. For titration, a 0.02516 N NaOH-solution

Card 1/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

Determination of the True Constants of the Decay Rate of Alkoxonium Ions in the Interaction Between Aliphatic Alcohols and Hydrogen Chloride

S/076/60/034/009/032/041XX
B020/B056

was used; the indicator used was methyl red. Mainly the dependence of the formation rate of alkyl halides on the initial concentration of the HCl in water-free alcohols as well as the temperature dependence of the reaction rate were investigated. The results obtained for HCl solutions in ethyl-, n-propyl-, iso-propyl-, n-butyl-, and isobutyl alcohol are given in Tables 1-6. In these tables the rate constant values k_1 calculated from the equation of the monomolecular reaction at various temperatures and different initial concentrations of HCl, the calculated values of the factors of the exponential functions k_0, and the activation energies E are given. The character of the relation between the formation rate of the alkyl halide and the initial HCl concentration is complicated. Table 7 gives the values of monomolecular constants for 70°, the factors of the exponential function, and the activation energies, as well as of the decomposition of the protonized molecules of various alcohols. The values k_1, k_0, and E found for isobutyl alcohol can, however, not be considered to be characteristic of the decay rate

Card 2/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

Determination of the True Constants of the Decay Rate of Alkoxonium Ions in the Interaction Between Aliphatic Alcohols and Hydrogen Chloride

S/076/60/034/009/032/041XX
B020/B056

of the iso-$C_4H_9OH_2^+$-ions. From the data found it follows that the factors of the exponential functions for the ion decay $C_2H_5OH_2^+$, $C_3H_7OH_2^+$, $C_4H_9OH_2^+$, $(CH_3)_2CHOH_2^+$, and $(CH_3)_3COH_2^+$ have values of from $2.8 \cdot 10^{12}$ to $2.5 \cdot 10^{14}$ sec^{-1}, i.e., that lie near the theoretical value for monomolecular reactions. The activation energies of the decay of these ions are within the range of from 28,000 to 31,000 cal/mole (Table 7). At the same temperature, the values of the rate constants for the investigated alcohols differ by no more than the tenfold (cf. Table 7). The great differences found for the rates in the dehydration of the alcohols by means of aqueous acid solutions, cannot be explained solely by the different reactivity of the protonized alcohol molecules, but is, in a high degree, determined by the different basicity of the alcohols, i.e., by the parameters of thermodynamic, not kinetic, character. There are 7 tables and 18 references: 7 Soviet, 3 US, 6 British, and 2 German.

Card 3/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

Determination of the True Constants of the Decay Rate of Alkoxonium Ions in the Interaction Between Aliphatic Alcohols and Hydrogen Chloride

S/076/60/034/009/032/041XX
B020/B056

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki (Academy of Sciences of the USSR, Institute of Chemical Physics)

SUBMITTED: January 5, 1959

Card 4/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

26293

S/190/61/003/008/006/019
B110/B220

15.8610

AUTHORS: Firsov, A. P., Tsvetkova, V. I., Chirkov, N. M.

TITLE: Kinetics and mechanism of the polymerization of α-olefins by complex catalysts. II. Polymerization of propylene in the presence of titanium trichloride and various aluminum alkyl compounds

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 8, 1961, 1161-1169

TEXT: The polymerization of propylene in the system $TiCl_3 + AlR_3$ containing the following cocatalysts: $Al(C_2H_5)_3$, $Al(n\text{-}C_3H_7)_3$, $Al(i\text{-}C_4H_9)_3$; $Al(C_6H_5)_3$; $Al(C_2H_5)_2Cl$ was studied in order to clear up the mechanism of polymerization in this system. The experimental apparatus shown in Fig. 1 consisted of: reaction vessel 1, device 2 for introducing the catalyst components, burette 3 for introducing the solvent into the reaction vessel, device 4 for regulating the constant pressure of the propylene, manometer 5 regulating the gas pressure in the reaction vessel, and ЭПП-08 (EPP-08) recorder 6

Card 1/7

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

for recording the reaction rate based on the pressure of propylene, flask 7 for propylene, separating columns 8, and vacuum part 9. In order to dry the propylene obtained at 370°C by dehydration of isopropyl alcohol by means of Al_2O_3, it was passed through columns 8 filled with alkali, $Mg(ClO_4)_2$, and P_2O_5, and subsequently frozen by using liquid N_2. After the propylene had been thawed, the medium fraction was dried by Na wire. The alkyl halides were distilled twice. $TiCl_3$ was prepared according to G. Brauer (Ref. 6: Rukovodstvo po preparativnoy neorganicheskoy khimii. (Manual of Preparative Inorganic Chemistry) Izd. in. lit., M., p. 547). Polymerization was performed at 40-70°C and at a propylene pressure of 170-300 mm Hg in the reaction vessel. The reaction rate was determined from the consumption of propylene. It was found that polymerization proceeds in two stages: a) unsteadily with increasing rate; b) steadily at a constant rate. The time $\tau_{1/2}$ needed for reaching half the steady rate is a function of pressure: $\tau_{1/2} = Q/p_{C_3H_6}$ (4). $\tau_{1/2}$ increases as follows: $Al(n\text{-}C_3H_7)_3 < Al(C_2H_5)_3 < Al(iso\text{-}C_4H_9)_3$. The variation of the reaction rate

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

is presumably due to the varying surface of the catalyst. The constants of the reaction rates are indicated in Table 1. The activation energy was almost constant within the experimental error: $E = 13,500 \pm 400$ cal/mole. The stereoisomeric composition of polypropylene is shown in Table 2. The following equation is derived for the constant k of the reaction rate: $k = \left[k_{incr} k_i / (k_{incr}/\nu + k_i)\right] S_{TiCl_3} c_o^*$, where k_{incr} is the constant of increase; k_i is the constant of initiation; ν is the polymerization degree; S_{TiCl_3} is the surface of $TiCl_3$; and c_o^* is the total number of active centers. Provided that $k_i \gg k_{incr}/\nu$, k becomes equal to $AS_{TiCl_3} c_o^* \exp(-E_{incr}/RT)$. The following values are indicated for the factor $AS_{TiCl_3} c_o^*$ in 1/min·g $TiCl_3$: $Al(C_2H_5)_3$: $4.0 \cdot 10^6$; $Al(n\text{-}C_3H_7)_3$: $6.02 \cdot 10^6$; $Al(iso\text{-}C_4H_9)_3$: $3.15 \cdot 10^6$; $Al(C_6H_5)_3$: $0.9 \cdot 10^6$. The reaction rate is determined assuming that the polymerization is not effected by the growth of olefin molecules adsorbed

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

on the catalyst but by dissolved olefin molecules colliding with the catalyst. The following is obtained per unit surface of $TiCl_3$, 70°C, $p_{C_3H_6}$ = 1 atm per second: $n = N_o P/(2\pi MRT)^{1/2} = 2.2 \cdot 10^{23}\ cm^{-2} \cdot sec^{-1}$ (N_o = Avogadro number; p = pressure of propylene in bars; $R = 8.31 \cdot 10^7$, n = number of collisions per cm^2 and sec). The reaction rate is $2.5 \cdot 10^{19}$ molecules/sec·g $TiCl_3$; $S_{TiCl_3} = 5\ m^2$ per g of $TiCl_3$. The reaction rate observed for $k \cdot c_{C_3H_6}$ was $4.5 \cdot 10^{18}$ molecules/sec·g $TiCl_3$. Considering the approximative character of the calculation, the study is thought to be satisfactory. A. F. Popov is thanked for the AlR_3 compounds made available. There are 3 figures, 3 tables, and 9 references: 4 Soviet and 5 non-Soviet. The reference to English-language publications reads as follows: Ref 2: G. Natta, J. Polymer Sci., 34, 21-48, 1959.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

Card 4/7

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

27573
S/190/61/003/009/008/016
B110/B101

15.8061 2209, 2409, 1372

AUTHORS: Firsov, A. P., Sandomirskaya, N. D., Tsvetkova, V. I., Chirkov, N. M.

TITLE: Kinetics and polymerization mechanism of α-olefins on complex catalysts. IV. Polymerization of propylene in the presence of $TiCl_3$ and $Be(C_2H_5)_2$

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 9, 1961, 1352-1357

TEXT: It was the purpose of the present paper to enlighten the role of organometallic compounds of stereospecific complex catalysts. The polymerization of propylene (P) in the presence of $TiCl_3$ and $Be(C_2H_5)_2$ was compared with that carried out with $TiCl_3$ and $Al(C_2H_5)_3$ by G. Natta (see below). The authors' experimental method was applied (Ref. 5: A. P. Firsov et al., Vysokomolek. soyed., 3, 1161, 1961). The α-modification of $TiCl_3$ was prepared according to G. Brauer (Ref. 6: Rukovodstvo po preparativnoy

4

Card 1/6

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

neorganicheskoy khimii (Manual for preparative inorganic chemistry), M., 1956). The distilled $Be(C_2H_5)_2$ contained 3% ether. Spectroscopically pure n-heptane was used as a solvent. Polymerization was conducted at 30-70°C and 220-585 mm Hg pressure, at a molar ratio of $Be(C_2H_5)_2$ to $TiCl_3 \approx 3$. As the polymerization rate proportionally depended on the concentration of P, for both $Be(C_2H_5)_2$ and $Al(C_2H_5)_3$, the rate constant k was calculated as follows: $k = w/c_{C_3H_6} \cdot G_{TiCl_3}$ liter/min·g $TiCl_3$, where w = polymerization rate in mole C_3H_6/min; $c_{C_3H_6}$ = P concentration in n-heptane at test temperature in mole/liter, and G_{TiCl_3} = weighed $TiCl_3$ sample in g. At temperatures of 30-70°C, the polymerization rate initially increased and became then constant. At 70°C, the rate became constant earlier with the $Be(C_2H_5)_2$ co-catalyst than with $Al(C_2H_5)_3$. $TiCl_3$ samples with surfaces of 9.2 and 5 m^2/g $TiCl_3$ were used. For the steady region of polymerization, practically constant values (2.94 and 3.20, respectively) were obtained in

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

the case of $Be(C_2H_5)_2$ for the specific constant $k_{spec} = k/S_{TiCl_3}$; for $Al(C_2H_5)_3$, however, these values were less constant (1.50 and 1.11, respectively). Nearly the same activation energies of 16,200 ± 150 cal/mole were obtained, from the temperature dependences of the polymerization rate for $TiCl_3 + Be(C_2H_5)_2$, irrespective of the $TiCl_3$ surface. The activation energy for $TiCl_3$ and $Al(C_2H_5)_3$, which had been previously determined (Ref. 5, see above) was 13,600 cal/mole. It resulted from the temperature dependence of the molecular weight which had been determined viscosimetrically (in Tetralin at 135°C) according to $[\eta] = 2.5 \cdot 10^{-5} \cdot \bar{M}_v^{1.00}$, and of the intrinsic viscosity at different concentrations, that the ratio $[\eta]/c_{C_3H_6}$ depended slightly on temperature and P concentration. In the laboratory of the authors, Yu. V. Kissin determined the crystallinity of polypropylene (PP), obtained in the presence of $TiCl_3$ and $Be(C_2H_5)_2$, by means of an ИКС-14 (IKS-14) split-beam spectrometer. The 840 cm^{-1} band was used for the calculation, the 1170 cm^{-1} band as the internal standard

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

of width. Fractionation was carried out by treating the polymers with boiling and cold heptanes. Polymerization temperature practically exerts no influence upon the stereoisomeric PP composition. The co-catalyst $Be(C_2H_5)_2$ is more stereospecific than $Al(C_2H_5)_3$ and other organometallic compounds. The crystallinity of PP somewhat increases with temperature. The authors previously (Ref. 5, see above) obtained, for the temperature dependence of the polymerization rate, the equation:

$$w = \frac{k_p k_i}{\frac{1}{\nu} k_p + k_i} S_{TiCl_4} c_0^*, \qquad (3),$$

where k_p = constant of the rate of growth; k_i = constant of the initiation rate; c_0^* = total concentration of active centers per unit surface; ν = polymerization coefficient. For an almost equal binding strength of the ethyl radical and the growing polymer chain in the catalytic complex, $k_p \approx k_i$. As ν varied from 11,400 to 1900, $(1/\nu)k_p \ll k_i$, and (3) becomes

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

$w = k_p S_{TiCl_3} c_o^*$. As for the co-catalyst $Be(C_2H_5)_2$ an activation energy in the chain growth is assumed 2600 cal/mole higher than that of $Al(C_2H_5)_3$, the expression $(AS_{TiCl_3} c_o^*)$ for $Be(C_2H_5)_2$ is 45 times that for $Al(C_2H_5)_3$. The effective activation energy of the breaking of the polymer chains with $Be(C_2H_5)_2$ as a co-catalyst was determined to be 16.2 kcal/mole according to the temperature dependence of the viscosity of the resultant PP. In the case of $Al(C_2H_5)_3$, it is close to the activation energy of the chain growth, which is 14,000 cal/mole for coarsly disperse $TiCl_3$ samples. The experimental results show that organometallic compounds that react with $TiCl_3$ form a catalytic complex; the alkyl group does not affect the activity of the catalyst. The alkyl group is removed from that point of the active bond where the monomer molecules are incorporated. The metal atom, on the other hand, enters the catalytic complex during the whole chain growth, and its influence upon polymerization rate, molecular weight, and stereoisomerism of PP is, therefore, much greater than that of the

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

alkyl group. There are 3 figures, 3 tables, and 9 references: 2 Soviet and 7 non-Soviet. The three most recent references to English-language publications read as follows: Ref. 1: J. K. Stille, Chem. Revs, 58, 541, 1958; Ref. 2: G. Natta, J. Polymer Sci., 34, 21, 1959; Ref. 8: W. Heinen, J. Polymer Sci., 134, 545, 1959.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

SUBMITTED: November 1, 1960

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

TSVETKOVA, V.I.; FIRSOV, A.P.; CHIRKOV, N.M.

Possibility of determining elementary act constants in catalytic polymerization. Dokl. AN SSSR 142 no.1:149-151 Ja '62. (MIRA 14:12)

1. Predstavleno akademikom V.N. Kondrat'yevym.
(Polymerization) (Catalysis)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, A.P.; KASHPOROV, B.G.; KISSIN, Yu.V.; CHIRKOV, N.M.

Stereospecific action of the complex catalyst α-$TiCl_3$ - $Me(C_2H_5)n$ in the polymerization of α-olefins depending on the nature of the metal of the organometallic compound. Vysokom.soed. 4 no.7:1124 Jl '62. (MIRA 15:7)

(Olefins) (Polymerization)
(Organometallic compounds)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

S/190/62/004/012/007/015
B101/B186

AUTHORS: Firsov, A. P., Sandomirskaya, N. D., Tsvetkova, V. I., ~~Chirkov, N. M.~~

TITLE: Kinetics and mechanism of α-olefin polymerization on complex catalysts. VI. Polymerization of propylene in the presence of $TiCl_3$ and $Be(C_2H_5)_2$

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 12, 1962, 1812-1816

TEXT: In continuation of a previous paper (Vysokomolek. soyed., 3, 1352, 1961) it has been found, with regard to propylene polymerization with $TiCl_3$ + $Be(C_2H_5)_2$, that the rate of polymerization does not depend on the ratio of the catalyst components or on the concentration of $Be(C_2H_5)_2$, provided that the reaction temperature is 30°C and propylene concentration is constant. The process of chain termination was now studied more closely by determining the dependence of the intrinsic viscosity $[\eta]$ and the polymerization coefficient ν on the test conditions. ν is defined as being

Card 1/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

equal to $\overline{M}/42$ or $\nu = 9.5 \cdot 10^2 [\eta]$. The following data are given for the temperature dependence of $[\eta]$ and ν:

Temperature, °C	30	60	70
$[\eta]$, dl/g	4.70	3.15	1.90
ν	4460	2990	1800

It was moreover found that $1/\nu$ is a linear function of $1/c_{C_3H_6}$. The following data were found for the dependence of $[\eta]$ and ν on $c_{Be(C_2H_5)_2}$ at 30°C:

$c_{Be(C_2H_5)_2} \cdot 10^2$ moles/liter:	1.33	3.46	17.3
$[\eta]$, dl/g	7.9	7.00	4.5
ν	7500	6650	4270

The evaluation of these data gives an activation energy for the termination by the monomer C_3H_6 of 26.4 kcal/mole, i.e. 10.2 kcal/mole more than the activation energy for the chain growth. The activation energy for the

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

termination by $Be(C_2H_5)_2$ is 16 kcal/mole. The ratio $k^{Be}_{term}/k^{M}_{term}$ is 10 at 30°C, but decreases with increasing temperature owing to the higher activation energy for the termination by the monomer. There are 3 figures and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)

SUBMITTED: July 3, 1961

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4017644 S/0190/64/006/002/0352/0356

AUTHORS: Firsov, A. P.; Kashporov, B. N.; Chirkov, N. M.

TITLE: Polymerization of propylene in the presence of alpha-$TiCl_3$-$Zn(C_2H_5)_2$. 1. The polymerization rate and the stereoisomeric composition of the polypropylene

SOURCE: Vysokomolekulyarnye soyedineniya, v. 6, no. 2, 1964, 352-356

TOPIC TAGS: polymer, polymerization, polymerization rate, propylene, polypropylene, catalyst, cocatalyst, titanium trichloride, diethylzinc, triethylaluminum, diethylberyllium, activation energy, stereospecific action

ABSTRACT: The polymerization of propylene was conducted in a specially constructed installation (as shown in Fig. 1 of the Enclosure) in n-heptane solution at superatmospheric pressure, in the presence of the catalytic system alpha-$TiCl_3$-$Zn(C_2H_5)_2$. At a constant pressure of 9 atm and at 60 and 70C the polymerization rate increased during the first 2 and 3 hours, then leveled off. The observed polymerization rate was 100 and 300 times lower than the respective rates obtained with $Al(C_2H_5)_3$ and $Be(C_2H_5)_2$ as cocatalysts. In another test, where the concentration of propylene was the only variable, the polymerization rate at 3 atm showed a deviation from a first order of magnitude towards a higher level. Within a pressure range of 5-9 atm an almost linear dependence of the polymerization rate from the concentration of propylene was recorded. An increase in concentration of the zinc catalyst

Card 1/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4017644

within 0.0518-0.551 mol/liter resulted in an increased polymerization rate. The effective activation energy of the polymerization process by the Ti-Zn catalytic system was found to be 8200 cal/mole. It was not possible to separate quantitatively the isotactic and atactic stereoisomers of polypropylene by means of fractionation from n-heptane. Orig. art. has: 2 charts, 1 table, and 3 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 26Jan63 DATE ACQ: 23Mar64 ENCL: 01

SUB CODE: CH NO REF SOV: 005 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4017645

S/0190/64/006/002/0357/0361

AUTHORS: Firsov, A. P.; Ter-Gazaryan, A. D.; Chirkov, N. M.

TITLE: Polymerization of propylene in the presence of α - $TiCl_3$-$Zn(C_2H_5)_2$. 2. Factors determining the molecular weight of polypropylene

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 2, 1964, 357-361

TOPIC TAGS: propylene, polymerization of propylene, polypropylene, polypropylene molecular weight, catalyst, titanium trichloride, diethylzinc, chain propagation, chain inhibition, intrinsic viscosity

ABSTRACT: The effect of concentration of propylene, of temperature, and of diethylzinc on the molecular weight of the obtained polypropylene was investigated. The methods used were described in an earlier paper by A. P. Firsov, B. H. Kashporov, and N. M. Chirkov (Vy*sokomolek. soyed., 6, 348, 1964). Concentrations of 1.20-3.97 mole/liter of propylene were polymerized at 50, 60, and 70C on the system α -$TiCl_3$- $Zn(C_2H_5)_2$, and the intrinsic viscosities of the obtained polymers determined. It was found that the polymerization coefficient and the intrinsic viscosities increased with increased concentration of propylene, and that they were

Card 1/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4017645

significantly lower when compared with the respective values of polypropylene obtained on the α -$TiCl_3$ - AlR_3 and α - $TiCl_3$ - $Be(C_2H_5)_2$ systems. In another set of experiments under identical conditions, except for varying concentrations of diethylzinc, it was found that the viscosities and the polymerization coefficient of polypropylene decreased with increased concentration of diethylzinc. It was calculated that inhibition of chain growth was the predominant reaction in the polymerization of propylene on the α - $TiCl_3$ - $Zn(C_2H_5)_2$ system. Orig. art. has: 4 tables, 2 charts, amd 5 formulas.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, Academy of Sciences SSSR)

SUBMITTED: 26Jan63 DATE ACQ: 23Mar64 ENCL: 00

SUB CODE: CH NO REF SOV: 002 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4030349 S/0190/64/006/003/0377/0378

AUTHORS: Firsov, A. P.; Yeremina, I. V.; Chirkov, N. M.

TITLE: The effect of temperature on the crystalline-phase content of isotactic polypropylene

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 3, 1964, 377-378

TOPIC TAGS: polypropylene, isotactic polymer, crystalline phase, atactic polymer, n-heptane, solubility in n-heptane, low temperature crystallization, catalyst, Ziegler-Natta catalyst, stereo-regularity

ABSTRACT: The investigation was conducted with polypropylene synthesized on the catalytic systems α - $TiCl_3$ - $Al(C_2H_5)_3$ and α - $TiCl_3$ - $Al(iso\text{-}C_4H_9)_3$. From this substance three fractions were prepared, one insoluble in boiling n-heptane, another soluble in boiling n-heptane but insoluble in cold n-heptane, and a third soluble in cold n-heptane. Samples of these fractions were subjected to x-ray spectroscopic study at 20C and -100C. No difference was found between the crystalline-phase contents in relation to temperature of samples insoluble in boiling

Card 1/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4030349

n-heptane or in those soluble in boiling n-heptane but insoluble in cold n-heptane. However, the fraction of polypropylene which was soluble in cold n-heptane revealed a 29% crystallinity at 20C and 45% at -100C. Defreezing reduced the 45% crystallinity to the 29% level. While it was known that his particular polypropylene fraction was a viscous liquid with an average molecular weight lower than that of the two other fractions, it was listed as an atactic polymer. The present investigation was able to demonstrate an increase in the crystalline phase of a low molecular weight isotactic propylene cooled to -100C, while its high molecular fractions remained unaffected. Orig. art. has: 1 table.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 23Jun62 DATE ACQ: 07May64 ENCL: 00

SUB CODE: CH NO REF SOV: 001 OTHER: 003

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4030353 S/0190/64/006/003/0417/0420

AUTHORS: Firsov, A. P.; Ter-Gazaryan, A. D.; Chirkov, N. M.

TITLE: Polymerization of propylene in the presence of α - $TiCl_3$ - $Al(C_2H_5)_3$ - $Zn(C_2H_5)_2$

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 6, no. 3, 1964, 417-420

TOPIC TAGS: propylene, propylene polymerization, catalytic system, alpha-titanium trichloride-triethylaluminum, diethylzinc, polypropylene, polymerization rate, catalytic center, polymeric chain

ABSTRACT: The polymerization of propylene was conducted in the presence of α - $TiCl_3$ - $Al(C_2H_5)_3$ - $Zn(C_2H_5)_2$, at 50C, and at a monomer pressure of 8.9 atmospheres in an n-heptane medium (with various concentrations of diethylzinc). It was found that during the initial period the rate of polymerization increased, following which it remained constant. At large concentrations of diethylzinc (0.344-1.05 mole/liter) the length of the increasing period of the polymerization rate and the stationary polymerization rate were practically identical. When diethylzinc was

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACCESSION NR: AP4030353

added to the α - $TiCl_3$ - $Al(C_2H_5)_3$ system, the polymerization rate of propylene was 3 times lower, and the molecular weight of the polypropylene produced was 20 times smaller. The authors assume that such an inhibiting effect of diethylzinc is due to an exchange of the alkyd group of diethylzinc for a polymeric chain of a catalytic center on the α - $TiCl_3$ - $Al(C_2H_5)_3$ system. From the records of relationship between the molecular weight of polypropylene and the diethylzinc concentration, the ratio of the constants K_{lim}^{Zn}/K_r was calculated and proved to be independent of the temperature factor. Orig. art. has: 5 formulas and 3 charts.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 04Feb63 DATE ACQ: 07May64 ENCL: 00

SUB CODE: CH NO REF SOV: 003 OTHER: 004

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, A.P.; KISSIN, Yu.V.; CHIRKOV, N.M.

Stereospecificity of the α-$TiCl_3$ - $Me(C_2H_5)n$ in the polymerization of propylene as dependent on the nature of metal of the metalloorganic compound. Vysokom.soed. 6 no.8:1537-1538 Ag '64.

(MIRA 17:10)

1. Institut khimicheskoy fiziki AN SSSR.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

[illegible]

[illegible]

[illegible] Tsvetkova, V. I.; Chirkov, N. M.

TITLE: Determination of the rate constants of reactions of initiation, propagation, and limitation of the growth of the chain in the steady-state catalytic polymeri- [illegible]

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11 [illegible]

TOPIC TAGS: catalysis, polymerization, propylene, macromolecular chemistry, reac- [illegible]

ABSTRACT: A generalized form of a method for determining the rate constants of individual reactions of the reactions of initiation, propagation, and limitation of [illegible]

[illegible] the monomer, initiation [illegible] the system alpha-$TiCl_3$-ne_n [illegible]

Card [illegible]

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

L 52566-65

ACCESSION NR: AP5015796

of limitation of chain growth represent reactions of chain transfer. After the reactions of limitation of chain growth by triisobutylaluminum and spontaneously, [illegible] of polymerization occurs slowly. It is [illegible] that these re- [illegible] represent reactions of slow chain transfer [illegible] has [illegible], and 4 graphs.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 2[illegible] Jan63 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 003 OTHER: 002 JPRS

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

L 22438-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 RM
ACCESSION NR: AP5000482 S/0062/64/000/011/1964/1969

AUTHOR: Firsov, A. P.; Chirkov, N. M.

TITLE: The influence of the nature of the organometallic component of a complex catalyst on the kinetics of stereospecific polymerization of propylene

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1964, 1964-1969

TOPIC TAGS: organometal catalyst, polymerization catalyst, metal alkyl catalyst, polymerization activation energy, chain growth activation energy, propylene polymerization, stereospecific propylene polymerization, aluminum trichloride

ABSTRACT: The study of such polymerization was conducted in the presence of a coarse dispersion of α-$TiCl_3$ and one of the metal alkyls: $Al(C_2H_5)_3$, $Al(n\text{-}C_3H_7)_3$, $Al(i\text{-}C_4H_9)_3$, $Al(C_6H_5)_3$, $Be(C_2H_5)_2$ and $Zn(C_2H_5)_2$ in a n-heptane medium. The rate of propylene polymerization, at constant concentration of the monomer, is first increase first, then retain a constant stationary value. This is a highly characteristic for the catalyst systems under study, applicable all

Card 1/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

L 22438-65
ACCESSION NR: AP5000482

C

compounds under study except $Zn(C_2H_5)_2$; the polymerization rate is directly proportional to the amount of α-$TiCl_3$, independent within a broad range of the metal alkyls concentration and directly proportional to the monomer concentration. The effective activation energy of these processes was determined by studying the relationship between temperature and polymerization rate. Both the latter and the activation energy varied considerably with the metal used; e.g., at 60 C the polymerization rate for the Be cocatalyst is 200 times higher than that for the Zn compound, while the effective activation energy of the first is twice that of the second. The alkyl group influenced only the rate of polymerization, e.g. a maximal 6-fold difference in this rate for the Al-compounds, at an almost identical activation energy. Thus, while the metal influenced both the number of catalytic centers and their reactivity, the alkyl group has little or no influence of either. The influence on the molecular weight of the polypropylene does not differ greatly for these catalysts, except for the Zn compound which limited chain growth sharply. The activation energy of the chain-growth-limiting reaction is rather close to the value of the chain-growth activation energy. It is shown that one or more additional reactions determined this chain growth. The stereo-

Card 2/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

L 22438-65
ACCESSION NR: AP5000482

specific activity of the catalytic system does not depend on the nature of the [illegible] alkyl cocatalyst. It is concluded that the most probable structure of the [illegible] may be a complex compound of catalyst components where the [illegible] a non-bonded titanium plays an active role [illegible] tables and 1 figure

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 29Jan63 ENCL: 00 SUB CODE: OC, GC

NR REF SOV: 011 OTHER: 004

Card 3/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, B.M., delegat XXII s"yezda Kommunisticheskoy partii Sovetskogo Soyuza

Thinking about the future. Grazhd.av. 18 no.12:2-4 D '61. (MIRA 15:1)

1. Pervyy sekretar' Dzerzhinskogo raykoma partii Leningrada.
(Aeronautics, Commercial--Study and teaching)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

USSR/Engineering - Machine Building

Card 1/1 : Pub. 41 - 1/17 FD-809

Author : Firsov, B. N.

Title : Automation of technological processes in agricultural machine building

Periodical : Izv. AN SSSR Otd. tekh. nauk, 2, 3-18, Feb 1954

Abstract : Describes recently developed semiautomatic machines and equipment for heating, forging, and assembling operations in agricultural machine building. Discusses activity of the Central Institute of Work Organization and Production Mechanization in the field of automation and mechanization of production processes.

Institution : --

Submitted : December 23, 1953

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, B. N., inzhener.

This is how engineers solved one of the economic problems. Tekh. mol. 24 no.5:19-22 My '56. (MLRA 9:8)

1. Glavnyy konstruktor Nauchno-issledovatel'skogo instituta "Traktorosel'masha"
(Chains) (Tractor industry)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, B.N.

Automatically controlled plant for manufacturing bushed roller chains. Trakt. i sel'khozmash. 30 no.8:38-41 Ag '60.
(MIRA 13:8)

1. Glavnyy konstruktor Nauchno-issledovatel'skogo instituta Traktoro sel'khozmash.

(Chains)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

PETROV, V.F.; FIRSOV, B.P., zasluzhennyy agronom Tadzhikskoy SSR; KANASH, S.S., otvetstvennyy redaktor; KNOPOV, B.I., redaktor izdatel'stva; GOR'KOVAYA, Z.P., tekhnicheskiy redaktor

[Progressive practices of Tajik cotton growers in obtaining high cotton yields] Peredovoi opyt khlopkorobov Tadzhikistana v poluchenii vysokikh urozhaev khlopka. Tashkent, Izd-vo Akademii nauk Uzbekskoi SSR, 1955. 46 p. (MLRA 10:1)

1. Chlen-korrespondent Akademii nauk Tadzhikskoy SSR (for Petrov)
(Tajikistan--Cotton growing)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, B.

USSR/Cultivated Plants - Technical, Oil, and Sugar Plants. M-4

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10884

Author : Firsov, B.
Inst : -
Title : Cotton.

Orig Pub : Nauka i peredov. opyt v s. kh., 1956, No 10, 56-58

Abstract : A brief survey of the history of the growth of cotton as a crop, its spread, and of the production of cotton fiber. A short description is given of the development of cotton growing in Central Asia in the pre-revolutionary period and after the establishment of the Soviet power.

Card 1/1

FIRSOV, B.

USSR/Cultivated Plants. - Technical, Oil, and Sugar Plants M-7

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

Abs Jour : Ref Zhur - Biol., No 1, 1958, No 1643

Author : B. Firsov
Inst : Not Given
Title : The Development of Cotton Growing in Afghanistan

Orig Pub : Khlopkovodstvo, 1956, No 12, 46-52

Abstract : The author's impressions are presented of his trip to Afghanistan. Information is given on the agrotechny, irrigation and varieties of cotton in Kataghan and Kandaher Provinces of Afghanistan.

Card : 1/1

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ORIG. SUB. : RZhBiol., No.4, 1959, No.15719

TITLE

ABSTRACT the Soviet fine-fibrous sorts of the 2IZ,504-V type, it is*100,000 per hectare and for the sorts of zero type branching - 130,000 to 180,000 per hectare. The number of plants in the nest depends on the placement scheme, the characteristics and the soil fertility.
-- B.L. Klyachko-Gurvich

* 75 thousand to

2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

USSR/Technical Crops. Oil Plants. Sugar Plants. M

Abs Jour: Ref Zhur-Biol., No 17, 1958, 77765.

Author : Firsov, B.P.
Inst :
Title : Results of the Productive Assimilation of the Square-Nest Method of Cotton Cultivation.

Orig Pub: V sb.: Materialy Ob"yedin. nauchn. sessii po khlopkovodstvu, T.I. Tashkent, Gosizdat UzSSR, 1958, 486-492.

Abstract: No abstract.

Card : 1/1

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

COUNTRY : USSR
CATEGORY : Cultivated Plants. Commercial Oleiferous. Sugar-Bearing. K
ABS. JOUR. : RZhBiol., No. 1, 1959, No. 1725

AUTHOR : Mirsov, B.
INST.
TITLE : For a New Level of Soviet Cotton Growing.

ORIG. PUB. : Plan. Kh-vo, 1958, No.3, 49-61

ABSTRACT : In cotton productivity, the U.S.S.R. has long ago occupied the first place in the world (in the year 1957 the productivity was 20.8 centners/hectare, and in the U.S.A. it was 13.2 centners/hectare). Introduction of new agricultural engineering methods, fertilizers and mechanization will enable, in the next few years a significant increase in productivity. Discussed are problems connected with the improvement of agricultural engineering, mechanization, work organization, widening of sowing areas in new districts and improvement in the research work of

CARD: 1/1 COTTON RAISING

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

Country : USSR M
Category: Cultivated Plants. Commercial. Oil-Bearing. Sugar-Bearing.

Abs Jour: RZhBiol., No 22, 1958, No 100373

Author : Firsov, B.P.
Inst : -
Title : Achievements and Problems of Agricultural Science on Cotton Growing.

Orig Pub: Vestn. s.-kh. nauki, 1958, No 5, 24-30

Abstract: No abstract.

Card : 1/1

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

MUKHAMEDZHANOV, M.V.; UL'DZHABAYEV, T.U.; MAMEDOV, M.T.; RODICHEV, S.D.; FIRSOV, B.P. Prinimali uchastiye: PROTASOV, P.V.; POLEVSHCHIKOVA, V.N.; MAL'TSEV, A.M. PEVZNER, L.I., red.; BONDARENKO, M., red.; BAKHTIYAROV, A., tekhred.

[On cotton plantations of the U.S.A.] Na khlopkovykh plantatsiiakh SShA. Tashkent, Gos.izd-vo Uzbekskoi SSR, 1959. 172 p. (MIRA 13:10)

(United States--Cotton growing)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FI.SOV, B.Ya., gorn.insh.

Stepped-up development of the Volkovo copper, iron, and vanadium ore deposit. Gor.zhur. no.6:6-11 Je '60. (MIRA 14:2)

1. Unipromed', Sverdlovsk.
(Ural Mountains--Mining engineering)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, E.

"Use of Phosphorescence Counters in Medicine". p. 124

Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii (Voprosy Gigiyeny i Dozimetrii) Medgiz, 1957, Moscow Russian, ok.

Prodeedings of the All-Union Conference on Medical Radiology (Hygienic and Dosimetric Problems).

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, F.

Mustard

15.3 centers of mustard per hectare. Kolkh. proiz v. 13 no. 2, 1953

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

LYUBIMOVA, Ye.A.; LYUSOVA, L.N.; FIRSOV, F.V.; STARIKOVA, G.N.; SHUSHPANOV, A.P.

Determination of surface heat flow in Staraya Matsesta. Izv. AN SSSR. Ser. geofiz. no.12:1806-1811 D '60. (MIRA 13:12)

1. Institut fiziki Zemli AN SSSR.
(Earth temperature)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

LYUBIMOVA, Ye.A.; LYUBOVA, L.N.; FIRSOV, F.V.

Terrestrial heat flow in the Krivoy Rog region. Izv. AN SSSR. Ser. geofiz. no.11:1622-1633 N '64. (MIRA 17:12)

1. Institut fiziki Zemli AN SSSR.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G. A.

Firsov, G. A. On the question of the stiffness of a ship under the influence of a squall. Bull. Acad. Sc. URSS Cl. Sci. Tech. [Izvestia Akad. Nauk SSSR] 1945, 648-656 (1945). (Russian)

An endeavor to investigate [illegible] squall [illegible] heeling moment due to the increase [illegible]

S. Lefschetz [illegible]

[illegible] Mathematical Reviews, Vol. [illegible]

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.A., MINIOVICH, I. YA.

"The Stabilizing Action of Screw Propellers." Iz. Ak. Nauk SSSR, Otdel. Tekh. Nauk, No. 4-5 - 1944

BR 52059019

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G. A.

Firsov, G. A. On the question of the oscillation of [illegible] provided with an active stabilizer [illegible]

The author presents theoretical investigation [illegible] with [illegible]

[illegible]

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G. A.

Mech. Inst., Acad. Sci. USSR, (-1946-)

"A Formula for the Calculation of the Rolling of a Ship With Steady Circulation."

Iz. Ak. Nauk. Otdel Tekh. Nauk, No. 5, 1946.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G. A.

LUKASHEVICH, A. M., PERNIK, A. D., FIRSOV, G. A.

"Theory of the Ship", published by State Publishers of Shipbuilding Literature, Moscow, 1950.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G. A. and VOZNESENSKIY, A. I.

"The Rolling of Ships with Irregular Motion of the Sea," Schiffbautechnik, April, 1956

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.A. and VOZNESSENSKIY, A.I.
Krylov Shipbuilding Res. Inst. USSR.

"Statistical Analysis of Data Concerning Rolling of Ships," paper submitted at Symposium on Behavior of Ship in a Seaway, Wageningen, Netherlands, 7-10 Sep 57.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.A. AND FEDYAYEVSKIY, K.K.
Krylov Ship Res. Inst.

"Study of Ship Heeling as Affected by Wind,"
paper submitted at Symposium on Behavior of Ship in a Seaway, Wageningen, Netherlands, 7-10 Sep 57.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

SOV/124-58-10-11194

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 10, p 70 (USSR)

AUTHOR: Firsov, G.A.

TITLE: Development of the Ideas of Academician A.N. Krylov in the Realm of Theory and Calculation of the Motion of a Ship in a Seaway (Razvitiye idey akad. A.N. Krylova v oblasti teorii i rascheta kachki korabley na volnenii)

PERIODICAL: Tr. Nauchno-tekhn. o-va sudostroit. prom-sti, 1957, Vol 7, Nr 2, pp 5-19

ABSTRACT: After a concise formulation of the basic hypotheses underlying the classical works of A.N. Krylov on the theory of the motion of a ship in a seaway, the author gives a brief enumeration of the results of investigations developing the works of A.N. Krylov over the last 50 years. Principal attention is paid by the author to the development of the engineering aspects of the theory whereby different approximated calculations of the motion of a ship can be formulated. The author barely mentions the hydrodynamic theory of the motion of a ship. Several passages are allotted to the statistical theory of the motion of a ship in an irregular seaway. N.N. Moiseyev

Card 1/1

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.A., kand.tekhn.nauk

Action of Fram damping tanks in irregular ocean waves. Trudy NTO sud.prom. 7 no.2:119-131 '57. (MIRA 12:1)
(Stability of ships)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.A.

FIRSOV, G.A., kand. tekhn. nauk.

A.N. Krylov's hypothesis on the theory of pitching. Sudostroenie 23 no.11:12-16 N '57. (MIRA 11:1)

(Hydrodynamics)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV G. A.

FEDYAYEVSKIY, K.K., doktor tekhn.nauk; FIRSOV, G.A., kand.tekhn.nauk.

Ship listing under the effect of wind. Sudostroenie 23 no.12:3-11 D '57. (MIRA 11:2)

(Stability of ships)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

CHUVIKOVSKIY, V.S., referent; NOVOZHILOV, V.V., referent; PERNIK, A.D., referent; YEGOROV, I.T., referent; TITOV, I.A., referent; FIRSOV, G.A., referent; BOYTSOV, G.V., insh.; BASIN, A.M., referent

Scientific engineering conference on hydromechanics and structural mechanics of ships. Sudostroenie 24 no.7:86-87 Jl '58. (MIRA 11:9)
(Naval architecture--Congresses)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G. A. Cand Tech Sci.,

"On the Effect of Hard-Over Rudder With Limited [Stop-to-Stop] Motion on an Irregular Sea."

Papers Presented at the Tenth Scientific-Technical Conference on Ship Theory (Sudostroyeniye, No 4, 1960)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

VOYTKUNSKIY, Yaroslav Iosifovich; PERSHITS, Robert Yakovlevich; TITOV, Igor' Anatol'yevich. Prinimali uchastiye: YEGOROV, I.T.; RUSETSKIY, A.A.; IVANOV, V.M.; ZHUCHENKO, M.M. KRIVTSOV, Yu.V., otv.red.; FIRSOV, G.A., otv.red.; OSVENSKAYA, A.A., red.; KONTOROVICH, A.I., tekhn.red.

[Handbook on the theory of ship construction; propulsive speed and maneuverability] Spravochnik po teorii korablia; khodkost' i upravliaemost'. Leningrad, Gos.soiuznoe izd-vo sudostroit. promyshl., 1960. 688 p. (MIRA 13:10)
(Naval architecture--Handbooks, manuals, etc.)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

SEMENOV-TYAN-SHANSKIY, Vladimir Veniaminovich. Prinimal uchastiye GLOTOV, V.K., kand.tekhn.nauk; FIRSOV, G.A., nauchnyy red.; OSVENSKAYA, A.A., red.; FRUMKIN, P.S., tekhn.red.

[Statics and dynamics of ships; buoyancy, stability, and launching theories] Statika i dinamika korablia; teoriia plavuchesti, ostoichivosti i spuska. Izd.2., perer. i dop. Leningrad, Gos.soiuznoe izd-vo sudostroit.promyshl., 1960. 576 p. (MIRA 14:2)

1. Kafedra teorii korablya Leningradskogo korablestroitel'nogo instituta (for Glotov).
(Naval architecture)
(Ships--Launching)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FEDYAYEVSKIY, Konstantin Konstantinovich; SOBOLEV, Gennadiy Vasil'yevich; BASIN, A.M., prof., doktor tekhn. nauk, retsenzent; FIRSOV, G.A., doktor tekhn.nauk, nauchn. red.; KUSKOVA, A.I., red.; SHISHKOVA, L.M., tekhn. red.

[Maneuverability of a ship] Upravliaemost' koroblia. Leningrad, Sudpromgiz, 1963. 374 p. (MIRA 16:8)
(Hulls (Naval architecture))
(Stability of ships)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

BLAGOVESHCHENKIY, S., doktor tekhn.nauk, prof.; VOZNESENSKIY, A., kand.tekhn. nauk; VOYTKUNSKIY, Ya., kand.tekhn.nauk, dotsent; GERASIMOV, A., kand.tekhn.nauk, dotsent; GRECHIN, M., kand.tekhn.nauk; DORIN, V., kand.tekhn.nauk; DOROGOSTAYSKIY, D., doktor tekhn.nauk; KOSOUROV, K., doktor tekhn.nauk, prof.; KRIVTSOV, Yu., kand.tekhn.nauk; MURU, N., kand.tekhn.nauk, dotsent; SEMENOV-TYAN-SHANSKIY, V., doktor tekhn. nauk, prof.; SOLOV'YEV, V., kand.tekhn.nauk, dotsent; TOPORKOV, I., inzh.; FIRSOV, G., doktor tekhn.nauk, prof.; FISHER, A., inzh.; KHRUSTIN, V., kand.tekhn.nauk, dotsent; EYDEL'MAN, D., inzh.

Concerning P.Khokhlov's article "Determining the center of gravity of a vessel during an inclining experiment with trim difference." Mor. flot 23 no.5:33-34 '63. (MIRA 16:9)
(Stability of ships)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

EWT(m)/EWP(w)/ETC(m)-6 IJP(c) WW/EK

ACC NR: AP6001012 (N) SOURCE CODE: UR/0286/65/000/022/0088/0089

AUTHORS: Firsov, G. A.; Khoroshanskiy, G. M.

ORG: none

TITLE: A ship's roll damper. Class 65, No. 176503

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 88-89

TOPIC TAGS: roll control, roll damping, oscillation damper

ABSTRACT: This Author Certificate presents a damper of ship's sideways roll. The device includes edge passive cisterns open to the outside water and connected by an air-duct with a regulating valve (see Fig. 1).

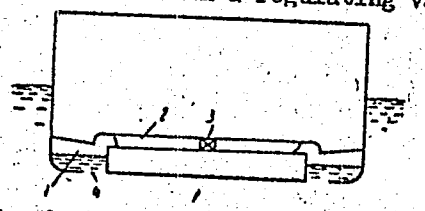

Fig. 1. 1.- Edge passive cisterns; 2 - air duct; 3 - regulating valve; 4 - openings in the bottom of the ship.

The design is intended to increase the degree of effectiveness of damping free oscillations and to reduce the amplitude of forced oscillations in a wave. The

Card 1/2

UDC: 629.12:532.5.041.011.52

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

ACC NR: AP6001012

edge cisterns are located in the space between the bottoms. These cisterns are filled with water from outside the hull. Water enters the cisterns through the openings in the bottom of the ship. The dimensions of the openings are determined by the variation in the stability of the ship's form which influences the parameters of its roll. Orig. art. has: 1 figure.

SUB CODE: 13/ SUBM DATE: 27Nov50

Card 2/2

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I.

Fluorographic study of the population of the rural areas of Sverdlovsk region. Vest.rent.i rad. 34 no.5:82-83 S-O '59. (MIRA 13:3)

1. Iz flyurograficheskogo otdela (zav. - doktor med.nauk V.G. Ginzburg) Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. - dots. I.G. Lagunova) i Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S. Levchenko).
(TUBERCULOSIS PULMONARY radiography)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I. (Moskva)

A decade of experience at the fluorographic station of the Sverdlovsk Province Hospital. Sov.zdrav. 19 no.2:38-42 '60. (MIRA 13:5)

1. Iz flyuorograficheskogo otdela (zav. - prof. V.G. Ginzburg) Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta (dir. - dotsent I.G. Legunova) Ministerstva zdravookhraneniya RSFSR i Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S. Levchenko).

(FLUOROSCOPY)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I.

Active pulmonary tuberculosis detected by fluorographic methods in collective farms of Sverdlovsk Province. Sov. med. 25 no.5: 146-147 My '61. (MIRA 14:6)

1. Iz Sverdlovskogo instituta tuberkuleza (dir. - prof. I.A.Shakleyn) i Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S.Levchenko).

(SVERDLOVSK PROVINCE—TUBERCULOSIS)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I. (Sverdlovsk)

Plaster bandages with splints. Fel'd. i akush. 26 no.12:49 D '61. (MIRA 14:12)

(PLASTER CASTS, SURGICAL)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I.

Some technical advice on the use of fluorgrams. Vest.rent.i rad. 36 no.3:55-57 My-Je '61. (MIRA 14:7)

1. Iz flyuorograficheskogo otdela (zav. - prof. V.G.Ginzburg) Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo Instituta Ministerstva zdravookhraneniya RSFSR (dir. - prof. I.G. Lagunova) i Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S.Levchenko).
(RADIOGRAPHY)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I.

Fluorographic detection of heart diseases on collective farms of the Ural Mountain region. Klin.med. 39 no.1:22-25 Ja '61. (MIRA 14:1)

1. Iz rentgenologicheskogo otdeleniya (zav. - I.B. Kibel') Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S. Lavchenko).
(URAL MOUNTAIN REGION—HEART—DISEASES)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I. (Sverdlovsk)

Fluorographic determination of dextrocardia. Klin.med. no.10: 140-142 '61. (MIRA 14:10)

1. Iz rentgenologicheskogo otdeleniya (zav. - I.B. Kibel') Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S. Levchenko).
(HEART—ABNORMITIES AND DEFORMITIES)
(DIAGNOSIS, FLUOROSCOPIC)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I. (Sverdlovsk)

Fluorographic examinations at collective farms in the Urals. Sov. zdrav. 20 no.7:66-69 '61. (MIRA 15:1)

1. Iz rentgenologicheskogo otdeleniya Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1.
(SVERDLOVSK PROVINCE--DIAGNOSIS, FLUOROSCOPIC)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, G.I.

Fluorographic detection of dextrocardia. Vest. rent. i rad. 37 no.5:71-72 S-O '62. (MIRA 17:12)

1. Iz rentgenologicheskogo otdeleniya (zaveduyushchiy I.B. Kibel') Sverdlovskoy oblastnoy klinicheskoy bol'nitsy No.1 (glavnyy vrach M.S. Levchenko).

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I. (Moscow)

All-Union conference of educational workers teaching informal courses in technology. Fiz. v shkole 15 no.4:91-92 Jl-Ag'55. (Technology--Study and teaching) (MIRA 8:10)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I.; KHOTILOVSKAYA, L., red.; VOLKOVA, L., tekhn.red.

[At the young engineers' exhibition] Na vystavke iunykh tekhnikov. [Moskva] Izd-vo TsK VLKSM "Molodaia gvardiia," 1957. 116 p. (Engineering--Exhibitions) (MIRA 11:7)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I., dotsent; LAPTEV, N., student

Efficiency of wireworm control. Zashch. rast. ot vred.i bol. 10 no.9:6 '65. (MIRA 18:11)

1. Permskiy pedagogicheskiy institut (for Firsov).
2. Michurinskiy pedagogicheskiy institut (for Laptev).

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I.F., fel'dsher (Melekess Ul'yanovskoy oblasti)

Treatment of condyloma. Fel'd. i akush. 26 no.3:45-46 Mr '61. (MIRA 14:3)

(WARTS)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I. G.

Firsov, I. G. - "On the problem of the injuriousness of clover seeds for seed-eating apions", Trudy Mariysk. gos. ped. inta, Vol. VII, 1948, p. 141-47, - Bibliog: 7 items.

So: U-3042, 11 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 7 1949).

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I.G. [Firsov, I.H.]

Foliar feeding of seed clover with boron fertilizers. Nauk. zap. ChDPI 8:105-108 '56. (MIRA 11:2)
(Clover) (Plants, Effect of clover on)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I.G. [Firsov, I.H.], dots.; KONDRATENKO, P.P., student; PANASENKO, T.T., student.

Characteristics of the growth, development, and productivity of healthy hemp in comparison with the hemp infested with hemp flea beetles during its vegetation. Nauk. zap. ChDPI 11:257-265 '57.
(Hemp) (Agricultural pests) (MIRA 11:5)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

M-6

Country : USSR
CATEGORY :

ABS. JOUR. : RZBiol., No. 19, 1958, No. 87128

AUTHOR : Firsov, I. G.
INST. : Cherkask State Pedagogical Institute
TITLE : Effect of Silicate Bacteria on Yield of Fodder Beets

ORIG. PUB. : Nauk. zap. Cherkas'k. derzh. ped. in-t, 1957, 11, 269-273

ABSTRACT : Data of experiments conducted in 1954-1955 at Agrobiological Station of Cherkask Pedagogical Institute on introduction of silicate bacteria into the soil on plantings of fodder beets of Permozhets variety. Suspension of bacteria was applied at a rate of 500 liters/hectare, by irrigation, during the second pair of leaves period. As a result growth of plants was accelerated and yield of roots was increased, in 1954, by 16.9%, and yield of tops by 18.32%. As a result of two applications of the emulsion, on the planting, sugar content of roots increased by 0.5%.

V. S. Shmal'ko.

CARD: 1/1

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I. G., dotsent

Use of hexachlorocyclohexane with fertilizers in corn protection. Zashch. rast. ot vred. i bol. 6 no.6:32 '61. (MIRA 16:4)

1. Pedagogicheskiy institut, g. Michurinsk.

(Corn(Maize)—Diseases and pests)
(Benzene hexachloride)
(Soil fauna)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

FIRSOV, I.G., dotsent

Harmful effect of the European corn borer. Zashch. rast. ot vred. i bol. 6 no.10:13-14 O '61. (MIRA 16:6)

(Bukovina--European corn borer--Extermination)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4

VANIN, I.I.; FIRSOV, I.G.

From the practice of protecting a state farm orchard.
Zashch. rast. ot vred. i bol. 7 no.7:10-11 Jl '62. (MIRA 15:11)
(Fruit—Diseases and pests)
(Plants, Protection of)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413220014-4"