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SHARKOV, Sergey Nikolayevich, nagrazhden medal'yu "Za trudovyy doblest"; GUROV, S., red.; SHLYK, M., tekhn. red.

[In six hours instead of seven] Vmesto semi chasov - za shest'. Moskva, Mosk. rabochiy, 1962. 33 p. (MIRA 15:7)

1. Brigadir pressovshchikov-vulkanizatorshchikov zavoda "Krasnyy bogatyr" (for Sharkov).
(Moscow—Rubber industry) (Socialist competition)

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1. T. SHARKOV

2. USSR (600)

4. Automobile Industry

7. Economizing metal in the foundry. Za ekon. mat. no. 1. 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

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SHARKOV, T.

"Spring preparation for autumn planting.", p 18, (KOOPERATIVNO ZEMEDELIE, Vol 6, No 2, Jan-Feb 1951, Bulgaria)

SO: Monthly List of ~~Russian~~ East European Accessions, Vol 2 #8 Library of Congress, August 1953, Uncl.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

BULGARIA/Cultivated Plants. Grains.

Abs Jour: Ref Zhur-Biol., No 5, 1958, 20236.

Author : P. Sharkov.
Inst : Not given.
Title : The Results of Competitive Tests of Several New Wheat Varieties. (Rezul'taty konkursnovo ispytaniya nekotorykh novykh sortov pshenitsy.)

Orig Pub: Selskostop. misl 1, 1956, 353-357.

Abstract: A detailed evaluation of three new varieties of winter wheat is given on the basis of 5-year tests, comparing these with No. 14 variety wheat which is widely distributed throughout Dobrudja (Bulgaria).

Card : 1/1

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BULGARIA Cultivated Plants - Grains.

Abs Jour : Ref Zhur - Biol., No 9, 1958, 39175

Author : Sharkov, T.K., Gyrbuchev, I., Gotsov, K.

Inst : -

Title : Contemporary Problems Relating to the Growth of Different Varieties of Seeds.

Orig Pub : Selskostop, nisyl, 1956, 1, No 11, 676-681.

Abstract : This paper contains a brief statement on the organization of seed growing in the USSR and the problems of Bulgarian seed growing and conserving the purity of different varieties of grain crops.

Card 1/1

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

Country : BULGARIA
Category : Cultivated Plants. Cereals. Leguminous Plants. Tropical Cereals. M

Abs Jour : RZhBiol., No 6, 1959, No 24815

Author : Ivanov, I. V.; Sharkov, T. K.
Inst : Dobruja Agricultural Scientific Research Institute imeni V. Chervenkov.
Title : Concerning Agricultural Engineering of the Karnobat Early-Maturing Brand of Wheat.
Orig Pub : Sb. nauch. tr. Dobrudzh. sëlskostop. nauchno-izsled. In-T "V. Chervenkov" pri M-voto zemed., 1956, 3, 149-164

Abstract : Data of the Scientific Research Agricultural Station of the town of Polyanovgrad. A number of demands for varieties suitable to environmental conditions is enumerated.

Card : 1/1

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Country : BULGARIA
Category : Cultivated Plants. Cereals. Leguminous Plants. Tropical Cereals. M

Abs Jour : RZhBiol., No 6, 1959, No 24814

Author :
Inst :
Title :

Orig Pub :

Abstract : to the regional variety No. 14, and is recommended for low-lying plaves, river valleys, lowlands along the Danube, regions of irrigated Systems and also the regions of South Bulgaria (on bituminous chernozems). -- A. P. Khlistova

Card : 2/2

Cultivated Plants. Experimental Methods. 1-3

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2"

Abs Jour : Ref Zhur - Biol., No 9, 1958, 39165

Author : Markov, T. K.

Inst : Dobrudzha Scientific Research Institute.

Title : Mathematical Processing of Data According to Professor Mudra

Orig Pub : Selskostop. nisl., 1957, 2, No 8, 465-472

Abstract : The essentials of Mudra's method and its advantages over the standard method were demonstrated on the basis of experiments on 26 varieties of wheat conducted at the Dobrudzha Scientific Research Institute.

Card 1/1

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SHARKOV, V., inzh.

Eliminate structural defects in harbor machinery. Rech.transp. 21 no.11:52 N '62. (MIRA 15:11)
(Harbors--Equipment and supplies)

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YEREMIN, S.; USKOV, V., pilot 1 klassa, komandir korablya; MEL'NIKOV, V. (Ul'yanovsk); KONYUKHOV, V., dispatcher; SHARKOV, V.; LUN'KOV, N.; AVDOSHKO, M.; BOGOYAVLENSKAYA, N.

Aeronautical kaleidoscope. Grazhd. av. 21 no.6:16-17 Je '64. (MIRA 17:8)

1. TSel'nograd skiy aeroport (for Konyukhov).

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, Vladimir Aleksandrovich; LEBEDEVA, N.G., redaktor; KOSHELEVA, S.M., tekhnicheskiy redaktor

[Estonian S.S.R.] Estonskaia SSR. Moskva, Gos.izd-vo geogr. lit-ry, 1956. 116 p. (MLRA 9:3)
(Estonia)

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PROCESSES AND PROPERTIES INDEX

Influence of methanol on adsorption of alkalies by cellulose. V. I. SHARKOV. *Zhur. Prikladnoi Khim.* 2, 579-83,(1929).—In the presence of 0-40% MeOH adsorption of KOH and NaOH by cellulose is practically const. though swelling decreases with increase in concn. of MeOH. At 50% concn. adsorption of KOH suddenly reduces to 1/3 and the cellulose is satd. by a 5% KOH soln. while with pure H_2O max. satn. is reached only with 17-20% KOH soln. With 82% MeOH max. satn. is reached with a 1% soln of KOH. Adsorption of KOH from 100% MeOH depends on the moisture content of the cellulose. Cellulose with an original moisture content of 5.31% dried for 15 hrs. at 120-130° adsorbed practically no KOH while the same cellulose dried for 4 hrs. at 100-105° adsorbed in 1 hr. 1.70% of its wt. of KOH from a 0.414% KOH soln. and 1.90% of KOH from a 2.14% KOH soln. In 1 hr. adsorption of KOH by cellulose from 100% MeOH was about 30% of that adsorbed in 140 hrs. This explains the results of Rassov and Wadewitz (*C. A.* 18, 1568) who found that MeOH in its properties to remove alkalies from cellulose occupies an intermediate position between H_2O and EtOH.

V. KALICHEVSKY

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1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

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Alkali cellulose from acetylcellulose. V. I. SHARKOV. *Zhur. Prikladnoi Khim.* 2, 775-6(1929).—Alkali cellulose prepd. by the method of Pringsheim and Aronowsky (C. A. 16, 3078) after careful washing with H_2O and drying to const. wt. at 110° contained 13.11% NaOH, as compared with 12.92% NaOH required by the formula $2C_6H_{10}O_5 \cdot NaOH$. The discrepancy is due to the difficulty of washing out the last traces of RtONa and the existence of the above compd. is thus considered to be proved.
V. KALICHEVSKY

COMMON ELEMENTS

MATERIALS INDEX

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23

CA

Quality of technical caustic soda employed in the manufacture of viscose silk. V. I. SHARKOV. *J. Chem. Ind.* (Moscow) 6, 1027-9(1929).—The purity of NaOH for use in viscose silk manuf. is of the utmost importance. Practical experience has shown that the presence of NaCl + Na_2CO_3 in NaOH in greater concns. than 3.5-4% is harmful, although very low concns. are not markedly bad. These 2 salts exert about an equal depressing effect on the swelling of the fiber of sulfite cellulose. A. C. ZACHLIN

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PROCESSES AND PROPERTIES INDEX

Hydrolysis of cellulose with gaseous hydrochloric acid V. I. Sharkov and O. D Kamaldin. *Lesokhim. Prom.* 1, No. 3-4, 7-12(1932).—Bleached cotton cellulose was dried at 150° to const. wt. and a weighed amt. placed in a 150 cc. ampoule, which was then evacuated, charged with gaseous HCl and brought up to the desired temp. by immersion in an oil bath. The treated cellulose was transferred to a one-l. flask with distd. H_2O and stirred with a glass rod. It was then placed in a Gooch crucible, washed to neutral reaction and dried to const. wt. The loss of wt. was calcd. on the original cellulose while the filtrate was transferred to a measuring flask and brought to a predetd vol. A detn. of the aldehyde groups was made in the filtrate by the I method. The dry residue from the crucible was transferred into 100 cc. of a 10% NaOH soln. and agitated. The insol. part was filtered off after 30 min. through glass wool, washed with H_2O and 1% AcOH, washed again with H_2O to neutral reaction and dried to const. wt at 105°. The amt. of cellulose which was dissolved in the alkali was recalcd. on the original sample. The expts. showed that the action of HCl gas on absolutely dry cellulose in H_2O and in 10% soln. of NaOH increases gradually with increase in pressure. Caramelization of cellulose occurs at 60° and higher. The best temp. for the destruction of cellulose for the purpose of its further hydrolysis lies between 30° and 60°. The destruction of absolutely dry cellulose by gaseous HCl takes place mainly in the first 5 min. of its action, while prolonged action of HCl (up to 5 hrs.) increases the sdy. in H_2O and 10% NaOH only to a slight extent. The sdy. in water remains almost unchanged with increasing pressure while that in 10% NaOH increases steadily, an indication that addnl. quantities of hydrocellulose are formed. The sdy. in 10% NaOH decreases if the cellulose contained up to 25% H_2O when it was treated with HCl, while cellulose that contained more than 25% of H_2O is completely dissolved in 10% NaOH. Thus the best conditions for the conversion of cellulose into hydrocellulose are: temp. 40-60°, moisture content not over 5%, duration of action with HCl not over 15 min., and a pressure as high as possible.

A. A. Boehtlingk

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The preparation of xylose sirup from aspen wood. V. I. Sharkov and A. P. Petrochenko. *Lesokhimicheskaya Prom.* 2, No. 3, 11-15(1933).—Since aspen cellulose contains a considerable amount of pentosans, it can be used in the prepn. of xylose sirup. The amount of cellulose converted to sol. products increases with the pressure and temp. of hydrolysis. An excessive temp. causes decompn. of the cellulose to volatile products (furfural).

A. A. Boehtlingk

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

Extracting furfural from aqueous solutions. V. I. Sharkov and I. Belyaevskii. *Lesokhimicheskaya Prom.* 2, No. 3, 15–19(1933).—The extn. of furfural may be increased 1.5–2 times, as compared with that from an aq. soln., by adding 10% NaCl. This effect is not const. and increases with the increase in the concn. The following org. solvents were investigated: ether, $AcCH_2CO_2Et$, AmOAc, iso-AmOH, CS_2, C_6H_6, $C_6H_5Me_2$, gasoline, turpentine, $CHCl_3$, $(CHCl_2)_2$, $MeCHCl_2$, iso-AmCl, *tert*-hexyl chloride and $CHBr_3$, and their soly. in the NaCl soln. was found to be 2–3 times less than that in pure H_2O.

A. A. Boehtlingk

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Results and possibilities of the development of Russian research on the hydrolysis of cellulose. V. I. Sharkov. *Lesokhimicheskaya Prom.* 3, No. 3, 24-7(1934).—A general discussion. A. A. Boehtlingk

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Six months of operation in the experimental [pulp] hydrolyzing plant in Cherepovetz. V. I. Sharkov. *Lesokhimicheskaya Prom.* 3, No. 9–10, 20–6(1934).—A detailed description of the processes and the equipment is presented. The pulp is hydrolyzed with H_2SO_4. The hydrolysis of pine bark yielded 71.8% of reducing sugar (according to Bertrand), based on the dry wt. A. A. Boehtlingk

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Ca

23

Hydrolysis of wood. V. I. Sharkov. Russ. 46,832, April 30, 1936. The process is carried out in an aq. soln. with CO_2 or SO_2 at about 30 atm. and 230°.

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1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

Dry distillation of wood, peat, etc. V. I. Sharkov Russ. 83,501, July 31, 1938. The material is carbonized under pressure at 300-500° and products of primary decompn. are continuously drawn off by means of a heat-stable organic solvent that remains liquid at the pressure in the reaction vessel.

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Colorless resin. V. I. Sharkov. Russ. 51,850, Sept. 30, 1938. Birch bark is extd. with an org. solvent and the ext. dry-distd. in vapors of organic solvents (EtOH, C_6H_6, etc.). The solvent is then distd. from the resin.

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Chemical composition of wood bark. V. Uronic acids in wood bark. V. I. Sharkov. *Lesokhim. Prom.* 1938, No. 3-4, 16-17; *Khim. Referat. Zhur.* 2, No. 4, 130 (1939); cf. *C. A.* 33, 1050[8].—Analytical data on the compn. of uronic acids in wood bark obtained by the methods of Nanji, Paton and Ling are: fir—bast 5.08-6.51%, bark 3.95-4.31%; birch—bast 7.35%, bark 2.20%; aspen—bark 3.56%. A part of the uronic acids which are contained in bark is not an integral part of pectins but is a part of the hemicellulose of the cell wall. A method was developed for the analysis of pectins, fruits, berries and fleshy roots. The method has not been verified for the analysis of wood material. W. R. Henn

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Chemical composition of wood. II. V. I. Sharkov and F. A. Sartaniya. *Lesokhim. Prom.* 1938, No. 3-4, 17-21; *Khim. Referat. Zhur.* 2, No. 4, 130(1939); cf. C. A. 33, 6584[1].—On the basis of a generalization of previous data, conclusions are drawn as to the genesis of wood.

W. R. Henn

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The chemical composition of wood bark. V. I. Sharkov, Z. A. Tyagunova and V. N. Kolpina. *Lesokhim. Prom.* 6, No. 2, 9-10(1938); *Khim. Referat. Zhur.* 2, No. 3, 123 (1939); cf. *C. A.* 33, 5651.—By extn. of the bast of pine with boiling water and with 96% alc. followed by an extn. of the residue with $(NH_4)_2C_2O_4$ soln. it was possible to sep pectin hydrate, from which the pectin insol. in 70% alc was sepd. An analysis of the pectin gave 57.5% of polyuronides, 12.0% of pentosans, 2.0% of methoxides, 1-2% of lignin, 1.0% of ash and about 3% of volatile acids. The nature of the remaining 20% of substances is not yet detd. The polyuronic acids contain galacturonic acid. In the pectin obtained from the bast of birch were found up to 71% of uronic acids. In its methoxide content (3.4%) it resembles the pectin obtained from the bast of pine.

The pectins of bark possess no jellying properties, probably owing to the low content of the methoxides.

W. R. Henn

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1ST AND 2ND ORDERS

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Chemical composition of wood bark. II. The content of cellulose in wood bark. ~~V. I. Sharkov~~, Muromtseva, V. N. Kalnina and Shchegolikhina. *J. Applied Chem.* (U. S. S. R.) 11, 1659-64 (in German, 1664) (1938); cf. *C. A.* 33, 1007[8]. The compn. of cellulose obtained from bast and bark of birch and aspen was studied. Cellulose is best sepd. from bast or bark by the method of Kurschner and Hoffer (*C. A.* 25, 5017); the yield was about [illegible]%, carbohydrates, 90%, of which was cellulose and 10% xylose. The hydrolysis of cellulose yielded glucose. Twenty-eight references. A. A. Podgorny

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Chemical composition of wood bark. V. I. Sharkov. *Bumazhnaya Prom.* 16, No. 8, 32-6(1958). The comparative chem. compn. of wood, bast and bark of spruce (*Picea excelsa*), pine (*Pinus sylvestris*), birch (*Betula pubescens*) and aspen (*Populus tremula*) was studied. Bark fragments were kept in the dark until air-dry, then dried at 60°, powdered and sifted to 0.25-1-mm. fineness. After the detn. of moisture content, a 30-40-g. sample was freed from tanning materials by aq. extn. in the Procter app. at max. 90° for 6-8 hrs. The total extractable matter in the filtrate and the contents of tannins and inorg. sol. salts were detd. in aliquot parts by known methods. The bark residue was extd. with 96% alc. in the Soxhlet app. for 6 hrs. and the filtrate evapd. to dryness at 90-100°. The bark residue was dried to a const. wt. and then analyzed by known methods. The tabulated results show that the chem. compn. of bark, bast and wood differs considerably. The cell walls of bast differ from those of bark by greater contents of uronic acids and pentosans, the absence of suberin and a low content of lignin substances. Thus, the decay process from living bast to bark is characterized by the accumulation of lignin-like substances and the development of suberin. Bark differs from woody part by a lower content (2 times) of cellulosic material and considerably greater content of extractable matter. Wood contains no suberin. No const. relation exists between the contents of other components (MeO groups, volatile acids, etc.) in wood and bark.

Chas. Blanc

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Chemical composition of wood. V. I. Shatkov and F. A. Sartaniya. *Mitt. Kiew forstlech. Akad.* (U. S. S. R.) No. 50, 3-20(1938). The chem. compn. of trees as a function of age is studied. Young shoots from the tops of pine, fir and birch trees are divided carefully into heartwood, sapwood, bast and bark. After removal of pitch, tannins, polysaccharides and pectins by extn. the insol. residues are analyzed for cellulose (I), lignin (II), total methoxyl (III), methoxyl in lignin (IV), uronic acids (V), pentosans and ash. In all specimens examd. the relative amts. of extractive substances and pectin are greatest in the youngest wood and decrease sharply with age. The amts. of I, II, III and IV are lowest in the youngest portions of the wood and steadily increase with age. The pentosan content decreases slightly with greater maturity, while the amt. of V remains const. or increases slightly. It is assumed that the increase in IV with age is due to the methylating action of protoplasm within the cell. Twenty references.

John Livak

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The chemical composition of wood bark. VII. The chemical composition of the fraction X. V. I. Sharkov. *Lesokhim. Prom.* 1939, No. 1, 41-5; *Khim. Referat. Zhur.* 1939, No. 8, 112-13; cf. preceding abstr.—After preliminary treatment with boiling alc. and a boiling 3% alc. soln of KOH, the water-sol. fraction X amounted to 21% from pine bast, 26% from fir bark and 28% from pine bark. This fraction on acidification with HCl formed an insol. ppt., which was sepd. with 96% alc. into a sol. and an insol. fraction. The lignin of each fraction of the ppt. was analyzed for COOH, OH and CH_3O groups. It is concluded that the fraction X is a soln. of salts and phenolates which are the residues of the natural more complex substances. The carbohydrate-lignin complexes (sepg. after the acidification) represent the carbohydrate-lignin group and the group of the carbohydrate-lignin acids. **IX. The pectin substances of pine and fir bast.** V. I. Sharkov, A. Girchits and F. A. Sartaniya. *Lesokhim Prom.* 1939, No. 3, 40-6; *Khim. Referat. Zhur.* 1939, No. 8, 113; cf. *C. A.* 34, 1846[1].—The finely ground bast of 70-80-year-old pines and firs was treated with boiling 96% alc., dried and extd. with water successively at 10°, 30°, 55°, 80° and 100°. The exts. were sepd. with 70% alc into 2 fractions (according to Ehrlich). The heterogeneous compns. of the fractions are attributed to the decompn of pectin during its sepn. Extn. with alc. and water at a temp. not exceeding 20° gave a pectin very similar to that obtained at 10°. From tabulated data it is concluded that the pectin substances in the bast of pines and firs have different solubilities in 96% alc. and water. Pine bast contains approx. 11% of pectin substances sol. in hot 96% alc., approx. 8% of pectin substances insol. in alc. and sol. in water at 10-80° and approx. 15% of pectin substances which hydrolyze slowly in boiling water. Approx. 35% of pectin substances were sepd. from pine bast. Approx. 95% of all uronic acids and approx. 75% of all methoxides contained in the bast were dissolved. W. R. Henn

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1D

The chemical composition of wood bark. VIII. The pectin substances in pine bast. V. I. Sharkov and A. Girchits. *Lesokhim. Prom.* 1939, No. 2, 8-12; *Khim. Referat. Zhur.* 1939, No. 9, 113; cf. C. A. 34, 5273[3].—Substances sol. in boiling 90% alc. and in boiling water were detd. The exts. of the initial bast contained OCH_3 1.96% and uronic acids 9.4% of the wt. of bast. The amts. of ext., OCH_3 and uronic acids in percentage of the wt. of bast were, resp.: after boiling 4 hrs. in 90% alc. 21.58, 0.64 and 2.47; after boiling 5 hrs. in water (fraction *B*) 11.23, 0.39 and 2.07; after boiling 27 hrs. in water (fraction *A*) 15.40, 0.45 and 4.39; residue No. 1 (after the first 2 exts.) 64.19, 0.93 and 4.86; residue No. 2 (after all 3 exts.) 48.79, 0.48 and 0.47. Besides the *A* and *B* fractions there were obtained by extn. fractions *C*, *D* and *E*. The following ratios of methoxyl and uronic acids were obtained: fraction *A* 1:0.58, fraction *B* 1:1.06, fraction *C* 1:0.90, fraction *D* 1:0.67 and fraction *E* 1:0.43. The degree of methylation of the pectin substances extd. from bast is not lower than that of pectins from beet and from citrus fruit skin. W. R. Henn

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CA

23

The chemical composition of wood bark. X. Lignin substances in spruce and fir bast. V. I. Sharkov. *Lesokhim. Prom.* 2, No. 8, 11-16(1939); *Chem. Zentr.* 1940, I, 399; cf. *C. A.* 34, 5273[6].—In addn. to material which is hydrolyzed by H_2SO_4, the bast also contains lignins. These can be divided into lignin I, which is obtained by extn. with hot water, and lignin II, which is obtained by boiling with alc., treatment of the ext. with 72% H_2SO_4 and drying at 105°. Lignin I obtained from spruce contained 60.2% C, 5.75% H_2, and 2.2-2.87% methoxyl; that from fir contained 59.42% C, 5.75% H_2 and 1.85-2% methoxyl. Lignin II from spruce contained 59.3-60.5% C, 6.1% H_2 and 1.9-2.5% methoxyl; that from fir contained 60.55% C, 5.95% H_2 and 2.6-3.3% methoxyl. By subjecting fir tannins to the above acid treatment a product was obtained which contained 59.60% C and 5.67% H_2. This points to the conclusion that lignin I and lignin II are practically the same and are nothing more than products formed by the treatment of the natural tannins with acid.

M. G. Moore

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

25

The chemical composition of wood bark. XI. Lignin from pine bark. V. I. Sharkov and V. N. Kalinina. *Lesokhim. Prom.* 2, No. 9, 25-31(1939); *Chem. Zentr.* 1940, I, 1049-50; cf. C. A. 35, 6143[3]. By fractionation of pine bark 4 lignins (A, B, C and D) were obtained. Lignins A and B were alc.-sol. and -insol., resp. Lignin C was obtained by heating the alkali-insol. residue with Na_2SO_3 and lignin D by chlorination of the residual fraction. MeO, HO, CO, C, H and ash were detd. Greater resistance to chem. action was found in the MeO-rich fractions. Bark lignin contains 16% HO as compared with 20% for wood lignin. H. E. Wirth

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21

The pectin substances of birch wood. . . . Sharkov. *Lesokhim. Prom.* 1939, No. 4, 8-12; *Khim. Referat. Zhur.* 1939, No. 8, 113.—The complicated carbohydrate-uronic complex that is present in the cell walls in the form of protopectin is gradually transformed into hemicelluloses of the polyuronide type as a result of condensation. Wood material 50-80 years old, and shoots 14 days and 5 days old were extd. successively with hot alc., and with water at 50° and at 100°. The pentosans, lignin, uronic acids, methoxides and ash were detd. in the residues. W. R. H.

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CA

21

The chemical composition of wood bark. VI. Suberin. V. I. Sharkov, V. N. Kalnina and S. V. Sobetskii. *Lesokhim. Prom.* 1939, No. 5, 8-12; *Khim. Referat. Zhur.* 1939, No. 7, 121; cf. *C. A.* 34, 1846[3].—Suberin was detd. in wood bark of Soviet-grown trees by Zetsche's method. The bark of pines, fir, aspen, oak and plane trees contained 2.0-8.3% of suberin. The sequoia trees of the Sucha region contained 8.1% of suberin. Various kinds of birch trees contained 19.7-38.8% of suberin. The bark extd. with water and 95% alc. and then treated according to the method of Zetsche yielded 21 fractions whose exts. were tested for equiv. acidity, I no. and m. p. of the acids. These fractions contained phellonic, eucosanedicarboxylic, suberic and suberolic acids. A detailed identification of the acids is not given.

W. R. Henn

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CA

The chemical composition of wood bark. XII. Transformation of bast into bark in Pinus silvestris. V. I. Sharkov and A. L. Gurchts. *Lesokhim. Prom.* 1940, No. 1, 14-23; cf. *C. A.* 35, 7184⁶.—Pine bark contains suberin (I) 2.85, lignin from tannic substances (II) 5.0, lignin from phlobaphenes (III) 6.98, alc.-insol. lignin (IV) 12.12, lignin formed as the result of the transformation of bast into bark (V) 24.59. Lignin was detd. according to Koenig. The bark and bast contain 13.40 and 33.2% of pectin substances, resp. Approx. 3% of pentosans and 19.8% of pectins are lost during the transformation of bast into bark. The tannic substances are transformed partially into phlobaphenes. In the bark 24.39% of lignin substances are newly formed. S. and G. consider that a part of the lignin substances in the bast are transformed into lignin substances of the bark as the result of anaerobic fermentation. The whole bast takes part in the process of the formation of bark. **XIII. The mechanism of the formation of bast fibers from cambial sap of pine.** *Ibid.* No. 3, 6-12.—Bast sap was collected according to the method of Wislicenus. On sterilizing by boiling, 3.01% of the sap (contg. 8.72% of N) was pptd. The sap contained 11.59% of dry substance of the compn.: fermentable sugars 58.9, lignin and tannic substances 9.36, hexosans 3.94, uronic acids 6.46, easily split methoxyls 3.1, fats, resins and waxes 0.02, ash 5.06 and substances of undetd. compn. 10%. No pentoses, methylpentoses and galactoses were found. The rotatory power of the sap for the Na line was +3.48° and after fermentation +0.8°. On the basis of their calcns. S. and G. consider that the fermentable sugars consist of sucrose 70 and invert sugar 30%. A comparison of the compn. of the dry substances of bast sap and that of bast tissues indicates that cellulose and pentosans, as well as a part of lignin and tannic substances, originate from the glucose and fructose of the sap. The glucuronic acid of the sap is transformed into xylan. Through *Khim. Referat. Zhur.* 1940, No. 7, 106. W. R. Henn

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PROCESSES AND PROPERTIES INDEX

CA

23

The chemical composition of wood. IV. The chemical composition of pine and birch wood. V. I. Sharkov and V. Muromtseva. *Lesokhim. Prom.* 3, No. 4, 3-7(1940). *Chem. Zentr.* 1940, II, 2100, et. *C. A.* 35, 7184[4]. Chem. analysis of pine and birch wood showed the following compn. (in %), resp., fats, resins, etc., 2, 1.34; lignin 27.3, 21.21; acetic acid 1.1, 1.1; MeO groups 0.5, 2.67; uronic acids 2.8, 4.01; galactan 3, 0; methylpentosan 0.73, 0; araban 4.15, 7.71; xylan 6.35, 14.3; mannan 9.6, 0; glucan 5, 11.5, cellulose 36.87, 32.06; protein 0.4, 0.75 and ash 0.2, 0.35. Calcns. based on these analyses indicate that about 11% more fermentable sugar can be obtained from pine wood than from birch.

M. G. Moore

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CA

11D

The chemical composition of wood. V. The formation of polysaccharides in pine wood. V. I. Sharkov. *Lesokhim. Prom.* 3, No. 5, 9-13(1940); *Chem. Zentr.* 1941, I, 329-30; cf. preceding abstr.—Two groups of org substances, carbohydrates and protolignin, are formed from CO_2 and H_2O by photosynthesis and the activity of the protoplasm. These are carried to the cells of the wood dissolved in water and are there converted into polysaccharides and lignin. The first process takes place in such a manner that under the influence of enzymes a portion of the glucose is converted into mannose or galactose by the rotation of the 2nd or 4th C atom. The 6th C atom is readily oxidized to CO_2H (uronic acid) while its reduction to a CH_3 group (methylpentosan) takes place with difficulty. The corresponding galacturonic and mannuronic acids are formed from galactose and mannose. Reduction of mannose yields rhamnose. Pentoses are formed from the acids by the splitting off of the CO_2H group. Simultaneously a polymerization occurs by which polysaccharides are formed and water is split off (754 cc. per 100 g. of wood). The latter evaps. or is carried to the inner layers of the wood where it again takes part in the above processes. Similar reactions probably take place in other kinds of wood.

M. G. Moore

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C-1

11D

Chemical composition of wood. VI. Chemical composition of cambium in the wood of pine and fir. V. I. Sharkov and A. L. Girchits. *Lesokhim. Prom.* 3, No. 6, 27(1940); *Chem. Zentr.* 1941, I, 1180; cf. following abstr. An investigation of the compn. of wood and sap of *Pinus silvestris* and *Picea excelsa* showed that during the formation of springwood the amt. of cellulose, lignin and pentosans increases. The ratio of these constituents varies with the age of the wood. At the start the lignin amounts to less than 20 and subsequently to approx. 50% of the cellulose, while the corresponding pentosan contents are 85-90 and 10% of the cellulose, resp. Uronic acid is utilized primarily for building the cell walls of the wood. At this period cellulose, pentosan and uronic acid are deposited. Lignin with a small methylating capacity is deposited very early, whereas lignin with a high methylating capacity is deposited later on. In the cell wall it is distributed evenly or more often in the middle part. The concn. of the cambial sap does not change essentially during the growth of the tree. The same is true for its chem. compn. which is practically equal to that of bast sap. Thus, the flow of bast sap through the cambium does not result in a chem. change of the compn. of sap.

M. Hosch

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23

An irrigation method for the hydrolysis of wood. V. I. Sharkov. *Lesnaya Ind.* 1940, No. 10-11, 56-60; *Khim. Referat. Zhur.* 4, No. 7-8, 117(1941).—The old multistage method for the hydrolysis of wood with a periodic removal of sugar to prevent its decompn. yielded up to 50% of sugars under lab. conditions, the yield increasing with the increase in the no. of steps. The multistage method proposed in 1939 with up to 20 steps yielded 50-55% of sugars on the wt. of the wood. The continuous method for the removal of sugar from the reaction medium produced good results, but yielded low concns. of sugar. In the proposed continuous irrigation method of hydrolysis, the wood material heated to the reaction temp. (160-80°) is sprayed continuously with dild. mineral acid heated to the same temp. This method accelerates the process considerably and yields up to 50-60% of reducing sugars. The theoretical fundamentals of the irrigation method of hydrolysis are described. W. R. H.

METALLURGICAL LITERATURE CLASSIFICATION

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SHARKOV, V. I.

Chemical composition of cellulose. VIII. V. I. Sharkov and S. V. Sobetskii (Leningrad Forestry Acad.). *Zhur. Priklad. Khim.* (J. Applied Chem.) 21, 659-66(1948); cf. *Lesokhim. Prom.* 3, No. 8, 17-21(1940); *C.A.* 43, 5946*h*.—Chem. analyses of a variety of common tree structures showed large variations in various components. Generally, shade trees contain more pentosans than do the conifers but no correlation of lignin content could be detected. Generally, in the spring the pentosan and uronic acid levels are higher than in the summer. Spring lignin contains more MeO than summer lignin. An oak specimen submerged for about 5000 years in water gave only a slightly higher than normal ash with somewhat higher content of hot-water solubles, and decrease of hemicellulose content. Specimens of trees taken from U.S.S.R. give the following av. values (based on the total dry wt.) of pentosans, Koenig lignin, cellulose, hemicelluloses, pentosans in cellulose, ash: *Alnus glutinosa* 21.3, 22.49, 48.34, 30.78, 2.91, and 0.29; *Prunus padus* 27.55, 20.24, 46.49, 38.06, 2.53, and 0.19; *Sorbus aucuparia* 29.53, 22.42, 46.44, 33.48, 4.03, and 0.63; *Juniperus* 15.45, 21.72, 48.27, 29.11, 1.91, and 0.22; *Cotoneaster vulgaris* 31.26, 22.39, 44.32, 42.97, 3.59, and 0.43; *Pinus silvestris* 11.2, 28.2, 53.8, 20.5, 2.0, and 0.23; *Ulmus laevis* 19.65, 21.85, 51.87, 25.51, 3.56, and 0.74; *U. foliaceae* 18.55, 26.21, 47.55, 24.14, 2.71, and 1.14; *Fraxinus excelsior* 25.39, 25.21, 44.12, 31.26, 1.09, and 0.51; *Crataegus* 29.06, 22.61, 42.68, 38.59, 1.0, and 0.44; *Acer platanoides* 25.62, 23.12, 48.0, 33.28, 4.01, and 0.28; *Tilia cordata* 23.31, 18.3, 49.78, 27.7, 1.17, and 0.6; *Populus nigra* 23.4, 18.8, 48.0, 28.83, 2.76, and 0.35; *Salix alba* 24.7, 28.42, 46.26, 24.27, 1.1, and 0.55; *Avylus avellana* 29.38, 21.97, 47.42, 33.53, 3.82, and 0.42; *Quercus sessiliflora* 22.78, 23.78, 43.59, 29.1, 2.95, and 0.26; *Olea europaea* 23.86, 19.76, 32.5, 35.06, 0.22, and 1.11; *Arbutus andrache* 25.73, 23.85, 37.57, 33.47, 1.49, and 0.83; *Hedera helix* 28.85, 24.56, 39.31, 35.43, 0.49, and 0.83; *Tamarix gallica* 20.54, 18.29, 34.54, 33.84, 1.49, and 5.43; *Laurus nobilis* 28.53, 20.85, 43.23, 35.12, 2.67, and 0.73; *Celtis austriaca* 23.51, 20.72, 41.85, 35.63, 2.05, and 1.26; *Punica granatum* 24.6, 21.07, 39.26, 37.77, 0.46, and 1.21; *Larix sibirica* 0.3, 29.45, 45.8, —, —, 1.0; *Betula tianschanica* 32.35, 18.56, 43.06, 41.18, 0.86, and 0.32; *Prunus armeniaca* 23.87, 18.28, 38.35, 33.68, 2.03, and 0.51; *Pirus malus* 26.23, 19.46, 40.87, 37.28, 3.43, and 0.41; *Picea schrenkiana* 12.66, 32.51, 41.4, 27.35, 2.48, and 0.55; *Chamaerops* 29.07, 20.64, 41.43, 35.95, 2.47, and 2.03; *Aleuribes* 27.09, 23.45, 46.34, 32.19, 2.76, 0.5; *Paulownia tomentosa* 23.52, 19.69, 45.07, 31.81, 0, 0.29; *Sambucus nigra* 25.43, 30.04, 47.76, 25.55, 4.3, and 0.61; *Prunus laurocerasus* 25.50, 26.63, 44.83, 37.27, 1.83, and 0.54; *Phododendron ponticum* 25.12, 28.81, 41.66, 33.93, 2.67, and 0.33. G. M. Kosolapoff

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USSR/Chemistry - Cellulose Oct 48
Chemistry - Hydrolysis

"The Mechanism of Cellulose Hydrolysis," V. I. Sharkov, V. S. Muromtsev, G. D. Paramonova, All-Union Sci Res Inst of Hydrol Ind, 8 pp

"Zhur Priklad Khim" Vol XXI, No 10 - p-1037

Develops method of measuring speed of hydrolysis of cellulose, based on direct determination of products of hydrolysis. Finds that percentages of easily hydrolyzed components of cotton cellulose and fir sulfite cellulose are 2.45% and 2.84%, respectively. Beta-glucoside bonds in cellulose are hydrolyzed

[redacted] 43/49T23

USSR/Chemistry - Cellulose (Contd) Oct 48

140 times faster than slower hydrolyzing components. Concludes that increase in speed of hydrolysis is not explained by presence of uronic or xylose radicals, but is result of structure of macromolecular distribution, which makes them more available to action of hydrolyzing agent. Submitted 26 May 47.

[redacted] 43/49T23

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SHARKOV, V. I.

PA 43/49T25

USSR/Chemistry - Wood Oct 48
Chemistry - Cellulose

"Chemical Composition of Wood: IX, Study of the Composition of Conifer Wood Hemicellulose," V. I. Sharkov, V. A. Yefimov, All-Union Sci Res Inst of Hydrol Ind, 8 pp

"Zhur Priklad Khim" Vol XXI, No 10 pp. 1045-52

Studies chemical composition of hemicellulose of fir, pine and Siberian larch by quantitative analysis of the products of five-step hydrolysis. Determines percent of glucose, mannose, galactose, xylose, arabinose, methylpentose, and uronic acid

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USSR/Chemistry - Wood (Contd) Oct 48

in the products, and judges amount of corresponding polysaccharides in hemicelluloses. Submitted 12 Mar 47.

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USSR/ Chemistry - Wood Oct 48
Chemistry - Cellulose

"Chemical Composition of Wood: X, Study of the Chemical Composition of Greenwood Hemicellulose," V. I. Sharkov, V. A. Yefimov, All-Union Sci Res Inst of Hydrol Ind, 3 pp

"Zhur Priklad Khim" Vol XXI, No 10

Studies chemical composition of the products of stepped hydrolysis of the hemicellulose of birch, aspen, Manchurian ash, and dogwood trees. Finds that uronic acid does not contain galacturonic acid but indicates presence of glucuronic acid. Does [redacted]

43/49T24

USSR/Chemistry - Wood (Contd) Oct 48

not detect mannane and galactane in these specimens. Determines percent of glucose, galactose, xylose, arabinose, methylpentose, and uronic acid in the products of hydrolysis. Submitted 12 Oct 47.

[redacted]

43/49T24

PA 43/49T24

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SHARKOV, V.I.

Chem (1)

Chem Abs v48
1-25-54
Cellulose + Paper
CATALYSTS

The hydrolysis of cellulose. V. I. Sharkov. *Khim. i Fis. Khim. Vysokomolekul Soedinenii; Doklady 7-oi Konf. Vysokomolekul. Soedineniyam* 1952, 132-9.—The hydrolysis (*C.A.* 43, 5941*i*) of the following cellulose prepns. was studied: bleached spruce sulfite pulp (I) contg. 89.6% α-cellulose, 0.26% ash, 4.1% pentosans, and 0.61% lignin; I mercerized with 18% NaOH, pressed to 3 times its wt., an excess 10% H_2SO_4 added, and the resulting α-cellulose (II) washed and dried at 105°; β-cellulose (III) prepd. by the addn. of H_2SO_4 to the filtrate of II; γ-cellulose (IV) obtained by prolonged dialysis and evapn. of the acid filtrate from III; β-cellulose (V) obtained by dissolving purified cotton in satd. $ZnCl_2$ soln. at 110°, pptg. V by addn. of H_2O, and drying at 100°; β-cellulose (VI) prepd. by dissolving V in 18% NaOH and pptg. with acid; and viscose fiber (VII). The % yield of sugars from these prepns. for hydrolysis times of 0.5, 1.0, 2.0, 3.0, 4.0, and 6.0 hrs., resp., were, from I, 2.9, 6.0, 7.5, 9.1, 11.3, and 13.1; from II, 6.6, 8.9, 13.4, 15.4, 18.7, and 21.5; from III, 62.1, 69.2, 77.1, 82.9, —, and —; from IV, 65.5, 79.0, 95.0, 105.0, —, and —; from V, 8.4, 14.7, 20.8, 24.9, 28.8, and 32.0; from VI, 4.1, 8.4, 15.5, 16.1, 18.1, and 22.5; and from VII, 8.5, —, 16.3, 20.2, —, and 22.0. The % mannose, galactose, glucose, xylose, arabinose, and glucuronic acid, based on the sugars extd., after a 3-hr. hydrolysis were: 22.6–23.1, 0.0, 50.5–51.5, 11.0–11.8, 0.0, and 10.0–10.6 for III, and 12–37.1, 0.0, 56.3–80.3, 1.0, 0.0, and 2.5–5.9 for IV. Solns. of III and VII in 10% NaOH were prepd. at −10° and mixed in varying proportions, H_2SO_4 was added, and the resulting ppts. were dried and hydrolyzed. By this method mixts. of III and VII contg. 0 (VIII), 25 (IX), 40 (X), 66.6 (XI), and 100% (XII) III were prepd. Upon hydrolysis of these mixts. the sugar content of the hydrolyzates for hydrolysis times of 0.25, 0.50, 1.00, and 3.00 hrs. were 6.0, 8.7, 13.4, and 20.4 for VIII, 9.8, 15.8, 21.3, and 25.3 for IX; 18.1, 22.6, 28.0, and 32.1 for X; —, 35.4, 39.6, and 45.0 for XI; and 54.3, 65.0, 70.4, and 71.0 for XII. The differences between the hydrolysis velocities as found and calcd. for mixts. of III and VII are due to the ability of VII to convert III from a readily hydrolyzable to a difficultly hydrolyzable state by inclusion.

John Lake Keays

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SHARKOV, V. I.

2

Chem Abs V48
1-25-54
Cellulose & Paper

Advances of chemistry of hemicelluloses. V. I. Sharkov. *Uspekhi Khim.* 22. 322-33(1953).—Review with 74 references. G. M. Kosolapoff

The determination of pentosans ...

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SHARKOV, V. I.

USSR,

The chemical heterogeneity of pine (Pinus silvestris) and spruce (Picea excelsa) wood as a function of location within the tree. V. I. Sharkov, V. A. Efimov, V. S. Muromtseva, and A. V. Tsalikova. *J. Appl. Chem. U.S.S.R.* 26, 579–89 (1953) (Engl. translation).—See *C.A.* 48, 9680e. H. L. H.

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SHARKOV, V. I.

The chemical heterogeneity of pine (Pinus silvestris) and spruce (Picea excelsa) wood as a function of location within the tree. V. I. Sharkov, V. A. Efimov, V. S. Muromtsera, and A. ~~V. Ramenovskii~~ *Zhur. Prikład. Khim.* 26, 628-39 (1953). — Disks were cut from the *P. silvestris* (120 years old) at 25 cm. from the ground (*A*), 8 m. (*B*), 14 m. (*C*), and 20 m. (*D*), and from *P. excelsa* (120 years old) at 25 cm. (*E*), 10 m. (*F*), 18 m. (*G*), 26 m. (*H*), and 34 m. (*J* series). Samples were selected for analysis from each disk from growth rings 0-17 (*a*), 24-34 (*b*), 42-53 (*c*), 74-90 (*d*), and 104-120 (*e*). All results are based on bone-dry, extd. wood. The % Et_2O extractives in pine was for *A*, *a-e*: 7.55, 7.30, 7.05, 4.32, and 3.03; *B*, *a-d* 7.45, 7.40, 3.24, and 3.79; *C*, *a-c* 4.88, 4.71, and 3.77; *D*, *a* 4.29; in spruce for *E*, *a-e* 1.07, 1.02, 1.02, 1.01, and 3.98; *F*, *a-d* 1.75, 1.16, 0.95, and 1.95; *G*, *a-c* 1.57, 1.07, and 1.42; *H*, *a* 2.35. The % total volatile acids (HCO_2H and AcOH) and % AcOH in pine was for: *A* *a-e* 1.40 and 1.37, 1.62 and —, 1.75 and 1.79, 2.00 and 1.94, 2.01 and 1.96; *B*, *a-d* 1.40 and 1.36, 1.55 and 1.52, 1.73 and 1.66, and 1.97 and 1.92; *C*, *a-c* 1.40 and 1.36, 1.67 and 1.64, and 1.78 and 1.75; *D*, *a* 1.40 and 1.36; in spruce for: *E*, *a-e* 1.54 and —, 1.65 and 1.63, 1.71 and 1.68, 1.82 and 1.78, and 1.93 and 1.90; *F*, *a-d*, 1.53 and 1.50, 1.62 and 1.59, 1.74 and 1.66, and 1.87 and 1.81; *G*, *a-c*, 1.54 and 1.50, 1.64 and 1.60, and 1.76 and 1.71; *H*, *a* 1.56 and 1.51; *J*, *a* 1.55 and 1.51. The % pentosans, Me pentosans, xylan, araban, and polyuronides were in pine for: *A*, *a* 11.8, 1.3, 4.45, 1.56, and 2.16; *A*, *b* 11.7, 0.80, 3.95, 1.50, and 2.04; *A*, *c* 10.9, 0.77, 3.63, 1.50, and 2.04; *A*, *d* 9.4, 1.18, 2.48, 1.50, and 1.99; *A*, *e* 8.26, 1.34, 2.19, 1.40, and 1.87; *B*, *a-d* 11.0, 1.25, 4.20, 2.12, and 1.85; *C* *a-d* 13.27, 0.88, 5.25, 1.88, and 1.34; in spruce the corresponding values were for: *E*, *a* —, —, 4.83, 1.40, and 2.01; *E*, *b* —, —, 4.32, 1.41, and 1.97; *E*, *c* —, —, 3.48, 1.41, and 2.01; *E*, *d* —, —, 3.60, 1.41, and 1.98; *E*, *e* —, —, 3.96, 1.46, and 2.05; *F*, *a-e* 11.22, 1.45, 4.64, 1.65, and 2.46; *G*, *a-c* 11.82, 1.24, 3.90, 1.71, and 2.50, *H*, *a* 12.41, 0.65, —.

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—, and —. The following values were obtained on hydrolyzates obtained by refluxing wood 1 hr. with 5 fresh portions of 10% H_2SO_4. The various wood samples were refluxed 5 hrs. with 10% H_2SO_4 and the hydrolyzates analyzed for readily hydrolyzed reducing sugars (I) and mannose (II); the residues were further washed, dried, and let stand 1 hr. at 15° in 80% H_2SO_4, ~~the mixts.~~ dried and refluxed 5 hrs., and the hydrolyzates analyzed for reducing sugars (III) which are hydrolyzed with great difficultly and mannose (IV). In pine the % I was for: *A*, *a-c* 19.5, 21.6, 21.1, 21.9, and 22.9; *B*, *a-d* 20.0, 22.8, 20.2, and 23.0; *C*, *a-c* 22.6, 21.7, and 22.6; *D*, *a* 28.8; in spruce the % I was for *E*, *a-e* 22.0, 21.3, 19.3, 19.4, and 17.8; *F*, *a-d* 23.2, 20.5, 22.5, and 20.8; *G*, *a-c* 24.2, 24.1, and 21.7; *H*, *a* 23.1; *J*, *a* 20.5; corresponding values for % II were 6.2, 6.1, 9.7, 11.1, and 12.4; 6.1, 5.2, 7.2, and 8.5; 6.9, 6.5, and 9.4; and 7.7; 7.1, 7.4, 8.5, 8.3, and 8.7; 7.1, 7.0, 8.4, and 8.9; 7.5, 7.9, and 7.2; 7.4; and 6.3; for % III were 35.4, 39.6, 49.3, 48.1, and 46.7; 43.1, 41.9, 47.6, and 43.3; 43.2, 46.7, and 46.6; and 41.2; 45.1, 46.2, 45.9, 49.8, and 46.2; 43.4, 46.5, 49.1, and 52.6; 44.8, 44.2, and 48.8; 44.6; and 41.5; and for % IV were 1.6, 1.5, 2.6, 1.9, and 1.8; 1.6, 1.3, 1.8, and 1.6; 0.74, 1.2, and 0.74; and 0.26; 0.59, 0.88, 0.28, 0.95, and 2.8; 0.47, 0.79, 0.79, and 1.95; 0.67, 0.70, and 2.00; 0.79; and 1.59. The % lignin in the pine varied from 26.2 to 28.7 and in spruce from 27.0 to 28.9, and the % MeO varied from 13.0 to 14.3 in the pine lignin and from 13.8, to 16.8 in the spruce lignin, but there was no correlation between these values and the location of the sample within the tree. All methods of analysis are given.

John Lake Keays

2/2

V. I. SHARKOV, ETC.

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SHARKOV, V.I.; DOBUSH, O.A.

Hemicelluloses in technical cellulose. Bumazh. Prom. 28, No.5, 14-18 '53. (CA 47 no.19:10220 '53) (MLRA 6:5)

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SHARKOV, V. I.

Chemical Abstracts
May 25, 1954
Biological Chemistry

(3)

Influence of the conditions of growth on the chemical composition of the wood matter of fir. V. I. Sharkov, V. A. Efimov, and V. S. Muromtseva. *Zhur. Prikład. Khim.* 27, 92–6(1954).—Under all conditions of growth in respect to illumination by sunlight in forest conditions (much or little shade) the wood matter of the fir shows the same tendency of contg. less and less pentosans in specimens taken from the periphery of the trunk in comparison with the central sections. On the other hand the content of methylpentosans and mannan steadily rises as one passes from the center of the trunk to the periphery and from the base of the trunk to its top. The chem. compn. depends mainly on the time of formation of the annular ring and does not depend on the width of the ring. A similar regularity was found in specimens taken from a 300-year fir tree. G. M. Kosolapoff

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SHARKOV, V. I.

(3)

Alcoholysis of cellulose. V. I. Sharkov, I. I. Korol'kov and A. V. Krunnova. *Zhur. Prikad. Khim.* 27, 319-28 (1954).—Heating cotton-cellulose specimens in autoclave with alc. solns. of H_2SO_4 at 160° with either EtOH or MeOH results in alcoholysis. The reaction rate (shown graphically) follows a 1st-order equation. The rate of cleavage of cellulose increases in such solns. with an increase of ROH concn. in the aq. ROH-H_2SO_4 medium. Alcoholysis of cellulose is accelerated by addn. of nonpolar or weakly polar solvents (toluene, C_6H_6, CCl_4). The nature of the cleavage is analogous to that observed in hydrolysis of cellulose. The adsorbed aq. layer on the surface of the cellulose fibers under the above conditions does not appear to dil. the H_2SO_4 content of the reaction mixt. The rate of alcoholysis of cellulose rises with an increase of its available surface (such as after mercerization). Alcoholysis performed in the presence of Me_2CO yields a material that is sol. in cold H_2O but insol. in EtOH and appears to be a cellulos, i propylidene deriv. G. M. Kosolapoff

9-20-54

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SHARKOV V.I.

Chemical composition of eucalyptus wood. V. I. Sharkov and V. S. Muromtseva. *Zhur. Priklad. Khim.* 27, 687-8 (1954).—Several species of *Eucalyptus* growing in Abkhaz S.S.R. have a chem. compn. of the wood close to the av. for hardwoods in general but showing high lignin and low pentosan contents. The following % hemicellulose, difficultly hydrolyzable polysaccharides, total polysaccharides, pentosans, Kürschner cellulose, lignin, and MeO groups were found: for *E. macarthuri dealbata* 23.4, 46.4, 69.8, 19.5, 39.6, 26.7, 5.8; *E. viminalis* 23.5, 44.0, 67.5, 20.0, 42.4, 27.0, 5.4; *E. viminaloides* 25.7, 46.0, 71.7, 20.7, 43.5, 26.5, 5.5; *E. cinerea* 24.6, 47.2, 71.8, 19.0, 38.4, 27.1, 5.4; *E. bicostata* 24.6, 47.5, 72.1, 20.9, 41.7, 24.8, 5.2; and *E. globulus* [illegible] 70.4, 18.6, 44.6, 28.0, 6.0. G. M. K.

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SHURKOV, V.I.

USSR.

Reversion of glucose in solutions of concentrated sulfuric acid. V. I. Shurkov and M. G. Smirnova. *Zhur. Prikład. Khim.* 27, 975-82(1954).—The effects of soln. of dry glucose in H_2SO_4 (61.2-89.2%) were examnd. The reducing ability of the solns. was detd. at various concns. and temp. levels (0-50°), as was optical activity. The results indicate that the reversion of glucose (formation of polysaccharides) becomes more intensive the higher the concn. of H_2SO_4 and of glucose in the soln.; elevation of temp. also increases the extent of reversion. The min. concn. of H_2SO_4 at which reversion becomes detectable declines with elevation of temp. The reversion products with the same reducing ability may have different optical activities, indicating differences in structures that form. Transition of cellulose into reversion products of glucose occurs at a slower rate than the reversion of pure glucose. The results are shown graphically.

G. M. Kosolapoff

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Chemical composition of sunflower hulls. V. I. Sharkov and O. A. Dobush (Wood-Tech. Acad., Leningrad). *Gidrolis. i Lesokhim. Prom.* 8, No. 3, 15-16(1955).—Sunflower seed hulls were ground and extd. with benzene, 96% EtOH, and water, which dissolved 1.09-1.15%, 0.75-0.88%, and 0.5-0.6%, resp. The ash was 1.12-1.36%. Cellulose was first detd. by the Kurschner and Hofer method and gave an av. of 43.7%. Some hemicelluloses were left and the method of Kizel and Semiganovsky was therefore adopted. This method gave 54.3% of polysaccharides, from which 22.2% were easily hydrolyzed and 32.1% slowly. In the latter were found 6.70% pentosans and 0.43% polyuronides. For detn. of slowly hydrolyzable cellulose (I) the material, from which pentosans were removed, was treated with 80% H_2SO_4 for 3 hrs., dild. with water (1:15), refluxed for 5 hrs., neutralized with $BaCO_3$, and fermented with yeast. The amt. of the fermented sugar was detd. by the difference in reducing substances and recalcd. on a cellulose basis. This method gave 28.7% of I. Pentosans, detd. according to Tollens, gave 23.25%, without correction for uronic acids 25.9%. Easily hydrolyzable hemicelluloses were heated in 2% HCl for 5 hrs. on an oil bath. The contents were evapd. under vacuum, treated with $PhNHNH_2$, and gave 0.15-0.19% of mannan (as mannose). Galactan was detd. according to Shorger as mucic acid and gave 0.65% (0.38% when cor. for galacturonic acid). Glucan was detd., after boiling for 5 hrs. in 2% HCl and neutralizing, by fermentation and gave 4.5-4.6%. Polyuronides by the method of Tollens and Lefevre gave a yield of 7.53%. Galacturonic acid was detd. as mucic acid and gave in the form of its anhydride 0.27-0.30%. Glucuronic acid was calcd. from the difference: 7.53 − 0.28 = 7.25%. To det. easily hydrolyzable xylan and araban hulls were boiled in 10% H_2SO_4 for 5 hrs. The hydrolytic soln. was changed every hr. to prevent the decompn. of pentosans. All 5 fractions were combined, neutralized with $BaCO_3$ to a pH of 4.8-5.0, and subjected to fermentation to remove hexoses. The fermentation broth was evapd. at 750 mm. to 25% of the original vol. and the contents were pptd. 4 times with 96% EtOH to sep. Ba salts of uronic acids and some colloidal substances. The filtrate was further evapd., and xylose detd. as the naphthylhydrazone. These methods gave 9.7% of easily hydrolyzable xylan and 2.3% of easily hydrolyzable araban. AcOH was detd. by refluxing *in vacuo* with 2.5% H_2SO_4 for 3 hrs., titrating the distillate with 0.1*N* NaOH, and gave 3.16% of AcOH. A trace of HCOOH was found in the distillate. Easily removable MeOH was detd. by hydrolysis of hulls in 10% H_2SO_4 for 5 hrs., addn. of KBr and $KBrO_3$ to remove impurities, and this was followed by addnl. distn. MeOH was analyzed by the flotation method of Ageev and Korol'kov (*Chem. and Tech. Control and Calculation in Hydrolytic and Sulfite-Alcohol Industry* 1953, p. 139) and gave 0.21%. Cutin was sepd. after boiling of the material with EtOH soln. of NaOH as Na salt of the cutic acid and gave 0.27% as the acid. Lignin, detd. by the method of Komarov, gave 27.0% with the compn.: 62.9% C, 5.87% H, 31.23% O, and 15.3% MeO. The total amt. of hexosans in sunflower hulls is 33.8%. The material is suggested as a source for EtOH. T. Jurecic

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Sharkov, V. I.

The influence of hydromodulus on the rate of hydrolysis of wood cellulose. I. I. Korol'kov, V. I. Sharkov, E. N. Garmanova, and A. V. Krupnova. *Gidroliz. i Lesokhim.* 4

Prom. 8, No. 6, 14–16(1955).—The influence of hydromodulus (I) on the hydrolysis of wood (60% of cellulose by the Kizel' and Semigmovskii method) at various concns. of H_2SO_4 was detd. The reactions were carried out at 180°. It was found that lowering I at 1.0% acid concn. the coeff. *t*, defined as the rate const. at the given I, decreased from 1 to 0.77 when I was reduced from 15–30 to 3. With I of 5 and 0.2% H_2SO_4 *t* was 0.5, but it was raised to around 1.0 by using 1.5%, or stronger, H_2SO_4. With I of 3 a *t* of 1.0 was reached with 2.0% H_2SO_4. The max. yield of reducing sugars (II) of 24.9% at 1.0% of H_2SO_4 and I of 15 was obtained in 40 min.; with I of 5, II of 24.1% was reached in 43 min. At 190°, 0.5% H_2SO_4, and I of 15, II was 27.0% attained after 31 min., but with I of 5, II was 24.7% after 35 min. Some of the factors considered to influence the rate of hydrolysis were: reaction of the acid with mineral material, nonuniform heating, decreased activity of the catalyst owing to an increase of the vol. of the liquid phase, lowered diffusion rate of the catalyst, and smaller amt. of the colloidally sol. cellulose at higher temp. Glucose solns. of 10 and 20% lowered the rate of hydrolysis for 10 and 20%, resp. The decreasing rate of hydrolysis of polysaccharides at low I was attributed primarily to the lowering of the activity of the acid.

T. Turecie

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SHARKOV, V. I.

The chemical composition of wood waste. V. I. Sharkov. *Gidroliz. i Lesokhim. Prom.* 8, No. 7, 3-5(1955).—Sections (trunk, branches, bast tissue, bark, and needles) of *Pinus silvestris* and *Picea excelsa* were analyzed for: water ext. (I), EtOH ext. (II), pectic substances (III), cellulose (Kürschner and Hoffer) (IV), uronic acids, pentosans (V), lignin (VI), methoxy (after water and EtOH extn.), fermentable sugars, methoxy (VII) in lignin, and ash. The amt. of I varied from a few percent in the stem tissue to nearly 50% in the young needles. The cellulose from stem and branches had around 2% of II, and the bast fibers up to 7%. The latter and the bark were rich in III, which were low in other parts of the trees. The pine bark had 46.4% of VI. The amt. of VII varied from a few percent in the bast tissue and needles to 15.5 and 16.7% in the wood fibers. Representative samples of *Populus tremula* and *Betula pubescens* were analyzed for I, IV, V, lignin (König), and ash. In contrast to the variations found in spruce and pine the analytical data in this case showed a significant divergence only in the detn. of birch pentosans from different trees (19.6 and 29.1%). Various sections of the same tree gave approx. the same percentage of V (around 28%) and AcOH (around 4.5%). T. Jurecic

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SHARKOV, V. I.

MT The effect of molecular interaction on the stability of glucoside links in the macromolecule of cellulose toward the action of hydrolyzing agents. I. I. Korol'kov, V. P. Levanova, and V. I. Sharkov. *Colloid J.* (U.S.S.R.) 17, 337-9(1955)(Engl. translation).—See *C.A.* 50, 2164i.
B. M. R.

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Sharkov, V. I.

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The effect of molecular interaction on the stability of glucoside links in the macromolecule of cellulose toward the action of hydrolyzing agents. I. I. Korol'kov, V. P. Levanova, and V. I. Sharkov (Inst. Hydrolysis and Sulfite-Alc. Ind., Leningrad). Kolloid Zhur. 17, 353-6(1955).—Hydrocellulose (I) from viscose was dissolved in 65% H_2SO_4 in 1 hr. and then dild. with 25% H_2SO_4 to achieve a concn. of 58% H_2SO_4. If the amt. of I used was such that the final concn. of I was 0.25, 10, 20, or 30%, the const. K of hydrolysis at 35° was 0.107, 0.057, 0.044, and 0.033 hr.$^{-1}$, resp. However, when the more concd. solns. of I were dild. with 58% H_2SO_4 to obtain 0.25% solns., K was still smaller than the K of the initially dil. soln. Thus, the differences in the rate of hydrolysis are due to the fact that the attack of 65% H_2SO_4 on I is more severe the greater the ratio of 65% H_2SO_4 to I, and that I, when dissolved in 65% H_2SO_4, is more rapidly hydrolyzed by 58% H_2SO_4. Thus the theory of Konkin *et al.* (*C.A.* 48, 13211e), that more concd. solns. of I are hydrolyzed more slowly because of forces between the chains of I, is untenable. J. J. Bikerman.

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SHARKOV, V. I.

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Math

Preliminary processing of cellulose pulp with alkalis and their effect on hydrolysis. V. I. Sharkov and Z. N. Martyshchenko (*Zh. prikl. Khim.*, 1955, 28, 881—885).—Earlier investigation showed that the sugar yield of mercerized cotton cellulose in hydrolysis conditions (in 0·3% H_2SO_4 for 1 hr. at temp. >100°) was twice as high as that of unmercerized cotton cellulose and that hydrolysis capacity of the cellulose increased with increase in concn. of mercerization liquors, and still further increased with a lowering of temp. during this process. The result of recent experiments made on cotton linters and white viscose silks, demonstrating the effect of different concn. of aq. NaOH and KOH at 50° and 18°, showed that with dilute alkali concn. of 0—18%, cellulose hydrolysis capacity falls slightly and then gradually increases. Through low-temp. treatment in varied alkali concn., cotton cellulose can acquire a maximum hydrolysis capacity; the lower the temp. of the alkali media, the greater this capacity. Viscose silks in alkaline media decrease in hydrolysis power (this can be obviated by completely dissolving the cellulose in alkali and subsequently recovering it).

A. L. B.

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SHARKOV, V. I.

62 The iodine number of cellulose. V. I. Sharkov and O. A. Dobush. *Zhur. Priklad. Khim.* 28, 901-11(1955); cf. Bergmann and Machemer, *C.A.* 25, 1071.—The commonly used methods of detn. of I no. are not suitable for detn. of end aldehyde groups in cellulose and water-insol. products of its hydrolysis. Cellulose oxidized in the course of the usual detn. of I no. can be reoxidized again with further consumption of I. The same specimen of cellulose in a swollen state gives a higher I no. than the same specimen in the dry state. G. M. Kosolapoff

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV V. I.

The influence of fine disintegration of wood before hydrolysis on the yield of sugars. V. I. Sharkov, I. I. Korol'kov, and E. N. Garmanova. *Gidroliz. i Lesokhim. Prom.* 9, No. 1, 6–8(1956).—To increase the hydrolytic degradation of cotton and pine polysaccharides the material was subjected to the crushing action of a vibratory mill charged with balls 15 mm. in diam. The disintegration was carried out at temps. between 180 and 230°, and up to 90 min. with 1000 vibrations/min. Cotton cellulose (I), treated 60 min., gave an amorphous powder. The latter yielded, upon hydrolysis, 23.0% of sugar in contrast to 5.7% obtained from the untreated I. The optimum conditions were achieved by a 2-step process. First, the hemicelluloses were broken down by heating the material at 230° in the presence of CO_2 for 10 min. and treating it with 1% H_2SO_4 at 180°. The residue was then subjected to disintegration for 20 min. This technique gave an 80–83% yield on the basis of total polysaccharides present. T. Jurečic

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SHARKOV, V.I., doktor tekhnicheskikh nauk, professor.

Sulfite-liquor alcohol industry in Sweden. Gidroliz.i lesokhim.prom. 9 no.2:25-29 '56. (MLRA 9:7)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut gidrolizney i sulfitno-spirtovoy promyshlennosti.
(Sweden--Alcohol)

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LEVANOVA, V.P.; SHARKOV, V.I.

Effect of salts on the formation and decomposition of sugar in the hydrolysis of polysaccharides. Gidroliz. i leskokhim. prom. 9 no.7: 3-5 '56. (MIRA 12:3)

1. Vsesoyinznyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Polysaccharides) (Hydrolysis) (Salts)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

USSR/Chemical Technology. Chemical Products and Their Application -- Wood chemistry products. Cellulose and its manufacture. Paper, I-23

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 6249

Author: Sharkov, V. I., Dobush, O. A., Kuchina, N. G.

Institution: None

Title: Conversion of Cellulose into a Readily Hydrolyzable State by the Method of Thermal Treatment

Original Publication: Zh. prikl. khimii, 1956, 29, No 6, 927-929

Abstract: Preparations of cellulose (cotton, fir, bleached sulfite) with loosened structure (weakened bonds between macromolecules) on heating in kerosene, at 200°, are converted into a readily hydrolyzable state. The greatest effect of conversion to hydrolyzable state is observed on concurrent grinding of cellulose and heating in kerosene. See also Referat Zhur - Khimiya, 1956, 52726

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Sharkov, V. I.

Matls

Transformation of cellulose into an easily hydrolyzable state by the method of thermal treatment. II. V. I. Sharkov and O. A. Dobush. *Zhur. Priklad. Khim.* 29, 1111-18 (1956); cf. *C.A.* 50, 15078c.—Transformation of cellulose into a readily hydrolyzable state by heat-treatment in kerosine 3 hrs. at 200° is apparently caused by degradation of the macromol. to cellodextrins, as shown by fractionation of such specimens. The degradation is retarded by the presence of strong H bonds within the unit. Heating specimens with destroyed H bonds in polar media greatly retards the rate of their rupture; the greater the ability of the solvent (water, alcs., glycerol, furfural, MeCOPr, PhNMe$_2$) to form hydrogen bonds with cellulose, the greater is the retardation.

G. M. Kosolapoff

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2"

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SHARKOV, V. I.

2

Structure of agar-agar jelly. V. I. Sharkov and R. K. Boyarskaya. *Doklady Akad. Nauk SSSR* 108, 99-102 (1956).—Agar-agar gels were studied by observing the rate of hydrolysis of dispersions, which is many times as great in the sol as in the gel states (Sharkov, *Gidroliz. Prom.* 3, Nos. 4, 5(1950)). Agar-agar is composed chiefly of linear polysaccharides and forms galactose upon hydrolysis. The rate of hydrolysis is expressed in terms of the relation of the percentage sugar formed to the max. amt. of sugar that can form (in 10% H_2SO_4), and the hydrolysis of the gel and sol dispersions was studied at various times and temps. of hydrolysis, and with different agar concns. The readily and slowly hydrolyzable fractions were virtually const. for various concns. in sols, whereas in the gels the proportion of the readily hydrolyzable polysaccharides decreased as the concn. of agar increased. A 1% gel, dried to 2% moisture, produced somewhat less sugar than did the original gel when hydrolyzed under identical conditions; this showed that drying changes the proportion of the difficultly hydrolyzable sugars. W. M. Sternberg

LFH

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Sharkov, V. I.

15

A study of structure of cellulose by the method of ethanolysis. I. I. Korol'kov, V. I. Sharkov, and E. N. Garmanova. *Doklady Akad. Nauk S.S.S.R.* 109, 1140-3(1956).—Amorphous cellulose (I) obtained by ball-grinding of cotton cellulose was heated in a Cu autoclave with abs. EtOH contg. 10% H_2SO_4 20–300 min. at 100°. The washed and dried products were used for detg. the percentage of dissolved cellulose. Similar examn. of other celluloses showed that while cotton cellulose contains 7% I, sulfite cellulose contains 15, cellophane 42, and viscose silk 45%. The d. of I was estd. at 1.488, i.e. decidedly lower than that calcd. by Hermans (*Contributions to the Physics of Cellulose Fibers*, 1946 (*C.A.* 40, 6259[1])). G. M. Kosolapoff

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SHARKOV, V. I.

5

Bisulfitation of vanillin. V. I. Sharkov, S. I. Saikhanov, skii, S. A. Sapotnitskii, Ya. A. Massov, and O. D. Karmalina. U.S.S.R. 106,758, July 25, 1957. Vanillin extd. from lignosulfonates is bisulfited during its extn. with benzene without first driving off the latter. . . . M. Hoseh.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I., prof.

Development of the hydrolysis industry. Khim.nauka i prom. 2 no.4:402-407 '57. (MIRA 10:11)

(Hydrolysis)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.

KOROL'KOV, I.I.; SHARKOV, V.I.; KRUPNOVA, A.V.

Causes for retarded reaction in the hydrolysis of vegetable cell polysaccharides at a low hydromodulus. Gidroliz. i lesokhim.prom. 10 no.1:8-10 '57. (MLRA 10:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrolisnoy i sul'fitno-spirtovoy promyshlennosti.
(Polysaccharides) (Hydrolysis)

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TEREK, S., aspirant. (Vengerskaya Narodnaya Respublika); SHAPKOV, V.I., professor.

Analysis of the composition of pentose hydrolyzates of cottonseed hulls and sunflower seed husks. Gidroliz. i lesokhim.prom. 10 no.5:13-14 '57. (MLRA 10:8)

1. Leningradskaya lesotekhnicheskaya akademiya Vsesoyuznogo nauchno-issledovatel'skogo instituta gidroliznoy i sul'fitno-spirtovoy promyshlennosti.

(Hydrolysis) (Pentoses)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.; LEVANOVA, V.P.

Kinetics of hydrolysis and the influence of the addition of salts. Gidroliz. i lesokhim. prom. 10 no.6:8-10 '57. (MIRA 10:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Hydrolysis) (Cellulose)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V. I.

KOROL'KOV, I.I.; SHARKOV, V.I.; GARMANOVA, Ye.N.

Alcoholysis technique for investigating the structure of cellulose. Zhur.prikl.khim. 30 no.4:586-598 Ap '57. (MLRA 10:7)
(Cellulose) (Alcoholysis)

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SHARKOV, V.I.; KOROL'KOV, I.I.; GARMANOVA, Ye.N.

The "limit" polymerization degree of cellulose. Zhur. prikl. khim. 30 no.11:1668-1672 N '57. (MIRA 11:2)
(Cellulose) (Polymerization)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.; YEFIMOV, V.A.; MOLCHANOVA, M.N.

Continuous wood hydrolysis in a horizontal hydrolyzer. Gidroliz. i lesokhim. prom. 11 no.6:1-2 '58. (MIRA 11:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Hydrolysis)

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SHARKOV, V.I.; KOROL'KOV, I.I.; KRUPNOVA, A.V.

Transforming woodpulp and wood into a readily hydrolyzable state by the action of γ-rays. Gidroliz. i lesokhim.prom. 11 no.8:3-4 '58. (MIRA 11:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Woodpulp) (Gamma rays--Industrial applications)
(Hydrolysis)

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KOROL'KOV, I.I.; SHARKOV, V.I.; KRUPNOVA, A.V.

Study of the "recrystallization" phenomenon in cellulose. Zhur. prikl. khim. 31 no.10:1560-1565 O '58. (MIRA 12:1)
(Cellulose) (Crystallization)

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SHARKOV, V.I.; GUZHAVINA, V.

Double compounds of glucose with mineral salts. Zhur.prikl.khim. 31 no.11:1759-1761 N '58. (MIRA 12:2)

1. Leningradskaya lesotekhnicheskaya akademiya.
(Salts) (Glucose)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, ~~V.I.,~~ red.; MIKHAYLOV, M.I., red.; SIDEL'NIKOVA, L.A., red. izd-va; KARASIK, N.P., tekhn.red.

[Technology of the hydrolysis and sulfite-alcohol production] Tekhnologiia gidroliznogo i sul'fitno-spirtovogo proizvodstva. Moskva, Goslesbumizdat, 1959. 438 p. (MIRA 13:2)
(Hydrolysis) (Alcohol)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.; IEVANOVA, V.P.

Investigating the packing density of various cotton cellulose preparations. Vysokom.soed. 1 no.5:730-737 My '59. (MIRA 12:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitnospirtovoy promyshlennosti.
(Cellulose)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.; LEVANOVA, V.P.

Investigating the packing density of macromolecules in various natural cellulose preparations. Vysokom.soed. 1 no.7:1027-1033 Jl '59. (MIRA 12:11)

1. Nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.

(Cellulose)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.; LEVANOVA, V.P.

Investigating the supermolecular structure of fibres from cellulose hydrate. Vysokom.soed. 1 no.7:1034-1041 Jl '59. (MIRA 12:11)

1. Nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Cellulose) (Fibers)

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15.0530

77275
SOV/63-4-6-9/37

AUTHOR: Sharkov, V. I. (Professor)

TITLE: Contemporary Methods of Hemicellulose Utilization

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 6, pp 742-747 (USSR)

ABSTRACT: Using literature data, the author reviews contemporary methods of hemicellulose separation and studies of the hemicellulose structure in connection with the utilization of agricultural wastes (corncobs, oat and cotton seed hulls, sunflower husks, and other wastes) by the chemical industry. Separation and structure of xylans obtained from hemicelluloses of Stipa tenacissima, and corncob and wheat straw is discussed (see references, 8, 9 and 11). It is planned to construct during the current seven years in the USSR, large installations for the partial hydrolysis of wood cellulose with superheated water and subsequent inversion of the soluble polysaccharides of hemicelluloses. The author also discusses the further conversion and use of the products of hemicellulose

Card 1/2

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I., doktor tekhn.nauk

What makes polysaccharides readily or sparingly hydrolyzable? [Trudy] NTO bum.i der.prom. no.8:193-203 '59. (MIRA 16:2)
(Hydrolysis)
(Polysaccharides)

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SHARKOV, V.I.; KUYBINA, N.I.

Production of levulinic acid. Gidroliz.i lesokhim.prom. 12 no.2:11-13 '59. (MIRA 12:3)

1. Vsesoyuznyy ~~nauchno-issledovatel'~~skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Levulinic acid) (Hydrolysis)

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SOV/69-21-3-22/25

5(4)

AUTHOR: Sharkov, V.I. and Levanova, V.P.

TITLE: Investigation of the Colloidal Nature of Polysaccharides by Means of Hydrolysis

PERIODICAL: Kolloidnyy zhurnal, 1959, Vol XXI, Nr 3, pp 359-363 (USSR)

ABSTRACT: The authors report on a method of studying the colloidal-chemical nature of starch and wood hemicelluloses by means of determination of the rate of hydrolysis. As a specimen of the first group, the authors used potato starch, which, after preliminary treatment and subsequent quantitative hydrolysis by 10% sulphuric acid, rendered 110% glucose, which corresponds to the content of 99.01% polysaccharides. In order to compare the rate of hydrolysis of potato starch under homogeneous and heterogeneous conditions, the authors arranged a series of experiments, for which water-soaked starch samples were heated to temperatures from 50 to 100°C. The first experiments revealed that

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SOV/69-21-3-22/25

Investigation of the Colloidal Nature of Polysaccharides by Means of Hydrolysis

at 40 and 50°C the starch granules had increased by 1.6 and 2.7 times in diameter respectively, as compared with their diameter at 20°C. Nevertheless, the solubility of the starch at 50°C did not exceed 0.2%. At 60°C and more, the starch tranformed into a homogeneous paste. On cooling the paste to 50°C, a 25% concentration of sulphuric acid, equally heated to 50°C, was added to the samples, so that a solution of 10% sulphuric acid at a concentration of polysaccharides of 0.5% could be obtained. Twenty-four hours later, subsequent to treatment of the samples in the thermostat at 50°C, the authors determined the glucose content of the starch with the ebulliostatic method. With the aid of coefficient 0.9 the amount of established glucose was converted into polysaccharides and was used for the computation of the hour constant of the rate of hydrolysis. For the obtained results

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SOV/69-21-3-22/25

Investigation of the Colloidal Nature of Polysaccharides by Means of Hydrolysis

reference is made to table 1. The table shows that the rate of hydrolysis of granular starch, swelled at a temperature of 50°C, is nearly three times less than the rate of hydrolysis of starch in paste form. Experiments intended to show the difference in the respective rates of hydrolysis at 40°C resulted in the establishment of a still greater discrepancy. The rate of hydrolysis of the paste exceeded by 4-5 times the rate of hydrolysis of granular starch (Table 2). A third series of experiments carried out according to the method of N.I. Klenkova showed a noticeable dependence of the rate of hydrolysis of starch on the circumstances of its preliminary preparation (Table 3). The authors further found a dependence of the rate of hydrolysis of starch paste on the degree of its concentration. Lowering of the concentration resulted in an increase of the

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SOV/69-21-3-22/25

Investigation of the Colloidal Nature of Polysaccharides by Means of Hydrolysis

rate of hydrolysis, which points to a diminution of the colloidal micelles (Graph 1). Experiments carried out with fir tree wood hemicelluloses showed the same results. Table 4 shows the average values of the constant of the rate of hydrolysis at various concentrations of the hemicelluloses. There are 4 tables, 1 graph and 5 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti, Leningrad (Scientific Research Institute of the Hydrolytic and Sulfite-Alcohol Industry, Leningrad)

SUBMITTED: 19 October, 1957

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

5.3410

73690
SOV/80-32-10-45/51

AUTHORS: Sharkov, V. I., Levanova, V. P.

TITLE: Brief Communications. Determination of the Real Specific Gravity of Cellulose

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2357-2359 (USSR)

ABSTRACT: A modification of Hermans' method (J. Pol. Sci., 1,3, 162 (1946)) is used for the determination of the specific gravity of cellulose. The above method was simplified: Instead of drying cellulose samples with dry air and displacing the latter by carbon tetrachloride vapors, preliminary oven drying at 105° was suggested. The thoroughly dry samples are moistened with absolute ethyl alcohol and washed with CCl_4. Subsequent determination of the specific gravity of cellulose is made by the flotation method equation, as follows: $d_{20^\circ} = d_t + K (t^\circ - 20)$, where d_t = specific gravity found at the flotation temperature; K = expansion coefficient, equal to $8 \cdot 10^{-5}$. The modified method is simpler and quicker than the Hermans method. There are 2 tables; and 1 U.S. reference (given above).

SUBMITTED: March 17, 1959

Card 1/1

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.; DMITRIYEVA, O.A.

Speeding up the hydrolysis of cellulose by grinding. Trudy LTA no.87:33-38 '59. (MIRA 13:4)
(Cellulose) (Hydrolysis)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

ZHARKOVSKIY, D.V.; SHARKOV, V.I., prof., red.

[Physicochemical studies of cellulose and its esters; cellulose structure] Fiziko-khimicheskie issledovaniia tselliulozy i ee efirov; k voprosu o strukture tselliulozy. Pod red. V.I.Sharkova. Minsk, Belorusskii in-t mekhanizatsii sel'.khoz., 1960. 137 p. (MIRA 14:3)
(Cellulose) (Nitrocellulose)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

NIKITIN, Viktor Mikhaylovich; SHARKOV, V.I., red.; SARMATSKAYA, G.I., red. izd-va; PARAKHINA, N.L., tekhn. red.

[Wood and cellulose chemistry] Khimiia drevesiny i tselliulozy. Izd.2., perer. Moskva, Goslesbumizdat, 1960. 468 p. (MIRA 14:6)

(Wood--Chemistry) (Cellulose)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

SHARKOV, V.I.; KRUPNOVA, A.V.

Study of cellulose obtained by the saponification of cellulose acetate. Khim.volok. no.5:26-30 '60. (MIRA 13:12)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut gidroliznoy promyshlennosti.
(Cellulose) (Cellulose acetate)

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SHARKOV, V.I.

Structure of cellulose; contribution to the discussion on the structure of cellulose. Vysokom. soed. 2 no. 11:1747-1750 N '60. (MIRA 13:11)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti, Leningrad.
(Cellulose)

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SHARKOV, V.I.; LEVANOVA, V.P.

Mechanochemical method of converting cellulose into a readily hydrolyzable state. Gidroliz.i lesokhim.prom. 13 no.1:5-7 '60. (MIRA 13:5)

1. Nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Cellulose) (Hydrolysis)

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SHARKOV, V.I.; LEVANOVA, V.P.

Absorption of KOH by cellulose from water - alcohol solutions.
Zhur.prikl.khim.. 33 no.7:1632-1636 Jl '60. (MIRA 13:7)

(Cellulose) (Potassium hydroxide)

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SHARKOV, V.I.; LEVANOVA, V.P.

"Amorphous" cellulose. Zhur. prikl. khim. 33 no.11:2563-2571 N '60. (MIRA 14:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitnospirtovoy promyshlennosti.
(Cellulose)

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SHARKOV, V.I.; KUYBINA, N.I.; SOLOV'YEVA, Yu.P.

Extraction of hemicelluloses from woodpulp without cleavage of the acetyl groups. Zhur. prikl.khim. 33 no.11:2571-2575 N '60. (MIRA 14:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti.
(Hemicellulose)

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SHARKOV, V.I.; KRUPNOVA, A.V.; SHCHEGLOVA, T.A.

Effect of the composition of a spinning bath on the above-molecular structure of cellulose regenerated from viscose. (MIRA 14:10)
Khim.volok. no.5:37-43 '61.
(Cellulose) (Viscose)

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R001548620003-2

KOROL'KOV, I.I.; ZAYTSEV, B.M. [deceased]; SHARKOV, V.I.; VAYNER, A.S.; EFROS, I.N.; EFROS, V.A.; BUBNOVA, N.I.

Percolation hydrolysis with a variable flow of liquid. Gidroliz. i lesokhim.prom. 14 no.2:10-14 '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut gidroliznoy i sul'fitno-spirtovoy promyshlennosti (for Korol'kov, Zaytsev, Sharkov, Vayner).
2. Segezhskiy gidroliznyy zavod (for I. Efros, V. Efros, Bubnova).
(Hydrolysis) (Percolation) (Wood—Chemistry)

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