

COUNTRY : H
CATEGORY :
ABS. JOUR. : RZhKhim., No 17, 1959, No. 61616
AUTHOR :
INSTITUTE :
TITLE :
ORIG. PUB. :

ABSTRACT : added 30gr Na₂SO₄, 30gr MgCl₂, 20gr of finely
Con'd ground magnesite and 50gr of cement. It is also
possible to add Glauber's salt, aluminum alum, or
a solution of borax to water. Effects of water/gy-
psium ratio and of vacuuming G-mix during its manu-
facture on the quality of G-forms are also review-
ed. The qualities of molds (porosity, \bar{G} from [sic],
diffusion coefficient, growth at the setting and
others) are affected considerably by the mixing
time of G with water and by the wetting time.
Depending on the properties of G-molds, desired,
it is possible to establish the necessary conditions

Card: 2/4

H - 45

28116

Z/013/61/000/002/002/006
D006/D102

15 2610

AUTHOR: Syska, Zbygniew, Engineer

TITLE: Increasing the green mechanical strength of ceramic bodies

PERIODICAL: Sklar¹ a keramik, no. 2, 1961, 35-39

TEXT: Green strength of porcelain bodies can be increased by the addition of highly plastic clays which, however, frequently contain considerable quantities of discoloring oxides (Fe_2O_3). To increase the whiteness of porcelain products, clays of poorer plastic properties but with a lower content of discoloring oxides are sometimes used. In such case, certain additives have to be admixed to increase the green mechanical strength of the body. The paper presents some results obtained by the ceramics industry in Poland concerning the various means of increasing the mechanical strength of ceramic bodies with special attention to the influence of aging, mixing water, addition of plastic clays and bentonites as well as organic additives. Aging over a certain period of time produces a uniform distribution of the moisture and increases the plasticity of the body. According to Govorov, the mechanical strength of bodies consisting of kaolinite-halloysite clay

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D006/D102

Increasing the green mechanical...

and quartz increases with aging, while the strength of montmorillonite-illite base bodies decreases. Tests with bentonite showed that the Ca-bentonite (the only type found in Polish deposits) does not noticeably improve the mechanical strength unless added in a proportion of 10% or higher. Na-bentonite, gained by activating Ca-bentonite with NaCl, produces much better results, but since Na-bentonite production would require the development of special methods, further experiments with Na-bentonite were discontinued. As to the various organic compounds used in industry to increase the plasticity and strength of ceramic bodies, tests with sulfite liquor, humic acid and carboxymethylcellulose produced the following results: An addition of 5% of a 10%-sulfite liquor resulted in a strength increase from 8.8 kg/cm² to 24.9 kg/cm². The liquor can not be used in slip casting because it clogs the plaster molds. Tests with the addition of humic acid from the Jerišov [Abstracter's note: The exact Polish spelling of this location could not be determined] deposit showed that the mechanical strength of the green porcelain body increased 48-49% with the addition of 5% of humic acid. At higher humic-acid proportions the strength again decreases. Therefore, soda was added in various proportions. As a result, the humic acid was neutralized, the grinding time reduced by 16%, and the mechanical strength con-

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Increasing the green mechanical...

siderably increased. Best results, namely a breaking-strength increase from 7.5 kg/cm^2 to 38.4 kg/cm^2 , were achieved at a pH value of 8.0 with 4% of humic acid and 0.87% of soda. On the other hand, addition of humic acid and soda fluidizes the paste and causes the nonplastic components to segregate and form a sediment which can be agitated only with difficulty. To prevent this sedimentation, tests with various coagulating agents such as HCl, Ca(OH)_2 , sulfite liquor and commercial-grade CaCl_2 were made. Of these, commercial-grade CaCl_2 proved most successful. Laboratory tests with the addition of 0 - 0.5% of carboxymethylcellulose (trademarked Glykocel) showed that the green mechanical strength of the body increased 30 - 100%, and similar results were also obtained under production conditions. It was also found that in slip casting Glykocel is not absorbed by the plaster molds but remains in the body. The results obtained with the addition of Glykocel can be summarized as follows: (1) The use of Glykocel in ceramic, porcelain, earthenware and other bodies increases the green mechanical strength of the bodies. (2) When added to porcelain bodies, Glykocel permits the use of less plastic clays with a lower content of discoloring oxides; reduces the breakage between operations; and lowers the weight of

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28116

Z/013/61/000/002/002/006

D006/D102

Increasing the green mechanical...

the body. (3) The use of Glykocel in glazes, paints and enamels increases their adhesion to the body or base. Research on its further applications is being continued. There are 8 tables and 12 references: 5 Soviet-bloc and 7 non-Soviet-bloc. The references to the four most recent English language publications read as follows: R.W. Grimshaw, Trans. Brit. Ceram. Soc., vol. 57, no. 6, 1958, 340-348; E.E. Werral, "The Organic Matter in Clays", Trans. Brit. Cer. Soc., 1956, no. 11, 589; E.E. Werral, C.V. Green, Trans. Brit. Ceram. Socs., 52, 528 (1953); and S.J. Speil: J. Amer. Cer. Soc., 1940, 23, 33. JK

Card 4/4

SYSPI, B.

A simple model of the stochastic process of learning. p. 73.

SZYLO I CERAMIKA. (Centralne Zarzady Przemyslu Sklarskiego i Ceramicznego oraz Stowarzyszenie Naukowo-Techniczne Inzynierow I Technikow Przemyslu Chemicznego) Warszawa, Poland.
Vol. 10, no. 4, Apr. 1959.

Monthly List of East European Accessions (EEAI) LC, Vol. 8, no. 7, July 1959.

Uncl.

2

Ca

The kinetics of adsorption of barium hydroxide by humous substances. K. I. Syskov. *Colloid J.* (U.S.S.R.) 2, 677-685(1936).—Data are given on the adsorption isotherms of Ba(OH)₂ by humic acids from various sources and by fusite at 0-80°. The Ostwald and van't Hoff equations fail to give const. values of K. The process consists in adsorption of Ba(OH)₂ on the surface followed by chem. reaction with the humic acids. F. H. R.

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

PROCESSING AND PROPERTIES INDEX

1ST AND 2ND ORDERS

1ST AND 2ND ORDERS

21

The composition of residual and bitumenless coals. K. I. Syskov. *Khim. Tverdogo Topliva* 7, 070-0(1936) — The residual pitch coal and its residue after extg. with alkali in an autoclave, the Chelyabinsk bitumenless coal "Gadushko," and the Bismark bitumenless coal were investigated, as to their adsorption abilities and —OCH₃ no., and the obtained data are tabulated. Sixteen references. A. A. Podgorny

ASB S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

E-2

ALPHABETIC INDEX

1ST AND 2ND ORDERS

ALPHABETIC INDEX

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

Composition of coal and its sorption power for barium hydroxide. K. I. Sykov. *Khim. Tverdogo Topliva* 7, 759-67(1936). The detm. of the total content of COOH and phenol OH groups in hard and brown coals by its reaction with Ba(OH)₂ is possible only after the extrn. of bitumen which interferes with the normal course of the sorption process, but it is probably applicable to the fusain type of coal. Seven references. A. A. P.

21

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

AUTOMATIC

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

MATERIALS INDEX

OPEN

COMMON LITERATURE

21

CA

THERMAL DECOMPOSITION OF HUMIC ACIDS

~Thermal decomposition of humic acids. K. I. Syskov, *Zh. Fiz. Khim.* 7, 931 (1933). Humic acids, obtained from the Aleksandriiskii brown coal (Ukraine) by treating it with 10% HCl, drying, extrn. with 1:1 alc.-C.H₂, and extrn. with 2% NaOH on a water bath under con- ditions preventing oxidation, were heated to 125°, 175°, 225°, 250°, 275°, 300° and 375°. A noticeable splitting of COOH groups begins at 175°, reaching a max. at 275°. Complete splitting does not occur even at 375°. There- fore, the temp. does not play an important role in the for- mation of bituminous coal(contg. no COOH groups after extrn. with alc.-C.H₂). Seventeen references. A. A. P.

A.S.B.S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PROCESSES AND PROPERTIES

Chemical composition of petrographical modifications of the Moscow coal. II. K. I. Syskov. *Khim. Tverdogo*

Topliva 8, 25:30(1937); cf. C. A. 28, 7476f. Sorption ability with respect to Ba(OH)₂ can be used as a measure of total content of COOH and phenolic groups of coal. Vitrain adsorbs Ba(OH)₂ best (6.7 milliequiv. g.), next is durain (5.7) and finally fusain (3.4). Vitrain of Moscow coal is highest in phenolic OH (4.5 milliequiv. g.) and fusain lowest (2.4). Twenty-four references.

A. A. Polgorny

ASR-51A METALLURGICAL LITERATURE CLASSIFICATION

E-2

PROCESSING AND PROPERTY INDEX

21

Co

Modern physicochemical methods of the coal and peat investigation. K. I. Sushkov. *Khim. Tverdogo Topliva* 8, 294-309(1937).—A review with 118 references.
A. A. Podgorny

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

E-Z

FROM SOCIETY

WILLIOTT

WILLIOTT OR UNY 111

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA BB CC DD EE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

PROCESSES AND PROPERTIES

21

CA

The adsorbent power of coals as a criterion of their degree of oxidation and classification. K. I. Syskov and A. A. Ushakova. *Khim. Tverdogo Topliva* 8, 692-702 (1937); *Chimia & Industrie* 40, 474. -- The nature and degree of oxidation of a coal can be evaluated from its adsorbing power toward aq. Ba(OH)₂ soln. This value is higher for oxidized than for unoxidized coals. On the other hand, the adsorbing power of lignites toward Ba(OH)₂ is higher than that of coals. The intermediate values correspond to coals constituting a stage intermediate between coal and lignite. The adsorbing power of coal toward aq. solns. of I, oxalic acid and methylene blue is not a criterion of their degree of oxidation.

A. Papineau-Couture

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

E2

PROCESSES AND PROPERTIES INDEX

3

The Lustre, Tinge and Reflective Characteristics of Cokes. L. M. Sapozhnikov and K. I. Syakov. (Koks i Khimiya, 1939, No. 4-5, pp. 3-7). (In Russian). An electrophotometer used for tests on specimens of coke formed in plastometer tests at a final temperature of 750° C. is described. Lustre is defined as the light intensity measured with the reflecting surface of the coke inclined at 45° to both the incident rays and to the axis of the photo-electric cell. The light intensity due solely to the tinge of the coke is measured with the reflecting surface inclined at 22.5° or 67.5° to the incident ray. The reflectivity of the specimen is given by the difference between the lustre and tinge measurements. Measurements were made on surfaces formed by cracks through the specimens and also on artificial cleavage plane. Consistent results were obtained without the need for any preparation of the reflecting surfaces. The possibility of using the results of optical measurements for the classification of coals and cokes is envisaged.

A 58-51A METALLURGICAL LITERATURE CLASSIFICATION

GROUPS	SUBGROUPS	LETTERS	SUBLETTERS	SUBSUBLETTERS	SUBSUBSUBLETTERS	SUBSUBSUBSUBLETTERS	SUBSUBSUBSUBSUBLETTERS	SUBSUBSUBSUBSUBSUBLETTERS	SUBSUBSUBSUBSUBSUBSUBLETTERS
A	B	C	D	E	F	G	H	I	J

SYSKCVAKSL8 600

1. SYSKCV, K. I.
2. USSR (600)

"Analytic Expression and Determination of the Strength of Lump (Kuskovykh) Material,"
Iz Ak. Nauk. SSSR, Otdel. Tekh. Nauk, No. 2, 1940. Institute of Mineral Fuels
Academy of Sciences USSR.

9. [REDACTED] Report U-1530, 25 Oct 1951

PROCESSED AND PROPERTY MARKS

New Coefficients of the Physico-Mechanical Properties of Coke.

L. M. Sapozhnikov and K. I. Syvokoy. (Koks i Khimiya, 1940, No. 8, pp. 3-8). (In Russian). The authors outline and discuss a scheme for the determination of three physico-mechanical characteristics of blast-furnace coke and consider their relation to the behaviour of coke in the blast-furnace. The drum test is used for the determination of the strength of the coke, the results being expressed in terms of work done plotted against the total surface area (determined by close sieving) developed by the coke in the drum. The curve obtained has an initial curved portion which characterises the initial breaking up of the lumps of coke due to the cracks originally present, and a subsequent straight-line portion over which the surface developed is proportional to the work done. The first portion of the curve can be used to characterise the lump strength of the coke (with cracks), and the second straight-line portion the strength of the coke material itself. The authors then determine the progressive change in screen analysis of the coke and plot this against the work done on the coke in the drum. This is an important characteristic, as the progressive change in screen analysis provides an indication of the state of the coke at different levels in the blast-furnace. Furnace operating data (blast and burden permeability figures) obtained with several different coxes are given to illustrate their relation to the coefficients determined by the test methods suggested by the authors.

METALLURGICAL LITERATURE CLASSIFICATION

COUNCIL ON RESEARCH AND DEVELOPMENT

COUNCIL ON RESEARCH AND DEVELOPMENT

PROCESSES AND PROPERTIES INDEX

27

New principles and methods of evaluating the physico-mechanical properties of coke. I. M. Sapszhnikov and B. L. Syakuy. *Zarodskaya Lab.* 9, NO. 17(1940). The principle is developed for evaluating the phys.-mech. characteristics of coke by the method of successive destruction of the lumps in a drum and is based on the relation between the work of destruction (A) and the new surface (S) formed. Curves are plotted showing dA/dS as ordinate and A as abscissa. The steep portion of the curve shows to what extent the coke is weakened by the cracks, while the flat portion shows the strength of the coke free from cracks. These curves are used to differentiate sharply the phys.-mech. properties of different coke and to relate these to their behavior in the blast furnace. The method is also used to det. the change in size of fractions and the actual fractional compn. at various levels in the blast furnace as well as the reacting surface of the coke. One of the practical conclusions to be drawn from these curves is the possibility of increasing the strength of coke by preliminary mech. treatment so that many coke at present unsuitable may become usable for the blast furnace.

B. Z. Kamich

ASM - S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

GROUPS		SUBGROUPS		SUBSUBGROUPS		SUBSUBSUBGROUPS		SUBSUBSUBSUBGROUPS	
A	B	C	D	E	F	G	H	I	J

SYSFCV4K818

60

1. SYSKOV, K. I.
2. USSR (600)

"Quality of Blast Furnace Coke and Process of its Disintegration," IZ. Ak. Nauk SSSR, Otdel, Tekh. Nauk, No. 3, 1941. Institute of Mining, Academy of Sciences USSR Laboratory of Chemistry and Coking Coal, submitted 15 Jul 1940.

3. Report U-1530, 25 Oct 1951.

B

Volume of Oxidation Zone in Blast Furnace and Quality of Coke. K. I. Syskov, Henry Brucher (Altadena, Calif.). Translation No. 2071, 1948, 11 pages. From *Bulletin de l'Académie des Sciences de l'URSS, classe des Sci. Techn.*, no. 9, 1948, p. 69-77.

Describes development of new indices of coke quality which characterize the above as well as the smoothness of the drop of the charge. Emphasizes importance of an adequate oxidizing zone in the blast furnace; and factors governing carbon combustion. A simple formula for the volume of the oxidizing zone is derived. Experimental data show that coke quality indices are related to the volume of the oxidizing zone. 11 ref.

AYR 31.4 METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PROCESSES AND PROPERTIES INDEX

9

CA

New theory of qualitative estimation of metallurgical coke. K. I. Syskov. *Doklady Akad. Nauk S. S. S. R.* 39, 248-252(1943); *Compt. rend. acad. sci. U. R. S. S.* 39, 218-21(1943)(in English).—Equations are presented for defining the qualities of metallurgical coke in terms of 2 types of indexes characterizing the behavior in the blast furnace, namely, (1) the resistance offered by the coke to the movement of gases and (2) the vol. of the C combustion zone. J. W. Perry

METALLURGICAL LITERATURE CLASSIFICATION

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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PROCESSES AND PROPERTIES INDEX

21

Sorption method of determination of constituent groups in coals and their components. K. I. Sytkov and T. A. Kukhareno. *Zavodskaya Lab.* 13: 25-8(1947). - (1) The sum of phenolic OH and of COOH groups is detd. by the amt. of chemisorbed Ba(OH)₂. Three equal samples, ground to 900 mesh/sq. cm., are treated with equal vols. of 0.03, 0.06, and 0.10 N Ba(OH)₂, allowed to stand, with occasional shaking, for 3 days, then a 4th day without stirring, after which one half of the soln. added to each sample is titrated with HCl. The amt. E₁ of Ba(OH)₂ adsorbed, plotted against the equil. concn., shows a sharp bend the ordinate of which measures the OH + COOH; the values obtained with different initial Ba(OH)₂ solns. must not differ by more than 0.2 mg. equiv./g. In many cases it is sufficient to derive the equil. E₁ from just one detn. with Ba(OH)₂; 0.03 N and only to check with a 0.06 N soln. The method is applicable mainly to humic acids, lignins and residual coals; presence of bitumens interferes with the sorption; results coincide with those found by the method of methylation with Me₂SO₄. (2) The COOH content is detd. in a similar way by the amt. E₂ of Ca(AcO)₂ chemisorbed in 4 days from 0.3 N and 0.4 N solns., by titration of the equil. soln. with 0.02 N NaOH; results are reliable when the two detns. do not differ by more than 0.2 mg. equiv./g. The method is applicable to humic acids, lignin, and certain alk. exts. from coal. Results coincide with those given by the method of methylation with MeOH. (3) The content of phenolic OH is found by the difference E₁ - E₂.
N. Thon

A S R - S L A METALLURGICAL LITERATURE CLASSIFICATION

GROUPS	SUBGROUPS	SUBSUBGROUPS	SUBSUBSUBGROUPS
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45

137 AND 180 CIPHERS

PROCESSES AND PROPERTIES INDEX

180 AND 274 CIPHERS

19

Method for Determination of the Toughness of Materials in Lump Form. (In Russian) K. I. Syskov, *Zavodskaya Laboratoriya* (Factory Laboratory), v. 13, Oct. 1947, p. 1202-1205.

Discusses the various concepts of toughness of lump materials which have been proposed. That of P. Rebinder, who considers toughness to be based on the relationship between the amount of energy used to create new surface and its area, is preferred. The mechanical strength of coke was investigated on this basis using a special apparatus which is described and diagrammed. Results are tabulated and discussed.

ASB-35A METALLURGICAL LITERATURE CLASSIFICATION

137 AND 180 CIPHERS

180 AND 274 CIPHERS

137 AND 180 CIPHERS

180 AND 274 CIPHERS

1ST AND 2ND ORDER PROCESSES AND PROPERTIES INDEX 1RD AND 2TH ORDER

5

3

Classification of Properties of Coke Characterizing Its Behavior in the Blast-Furnace Process. K. I. Hyskov. (Izvestiya Akademii Nauk S.S.S.R., Otdelenie Tekhnicheskikh Nauk, 1949, No. 4, pp. 514-518). The properties of blast-furnace coke are considered and classified in three groups which are characterized by their effects on blast-furnace performance, smoothness of descent of the burden, and fuel consumption, respectively. The specific properties in each group are defined.—R. A. R.

A S H - S L A METALLURGICAL LITERATURE CLASSIFICATION E-2

MATERIALS GROUPS	1ST ORDER	2ND ORDER	AUTHOR LETTERS
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

CA

21

Evaluation of the quality of metallurgical coke on the basis of the hydraulic principle. K. I. Syskov and I. N. Nikolaev (Acad. Sci. U.S.S.R., Moscow). *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1949, 1197-1208.—Quality is evaluated by coeff. of resistance k against flow of gases through a heap of coke in accordance with $k = 100 \alpha(2 + \beta s)$ where $k = (v + 1000/v)\sqrt{r} + 1000/v$ and $\beta = 300/(v + 1000)\sqrt{v}$. For a cube of coke pieces weighing 1 kg., v is the surface of the pieces and r is the vol. of the free spaces between the pieces. The coeffs. α and β can be obtained from tables; the values of v and r are calcd. on the basis of screen analysis (example given). The method is applicable to coke under conditions corresponding to those in the hearth of the blast furnace. Expts. have shown that after 150 r.p.m. in Suidgren drum, screen analysis is quite close to that of coke removed from the hearth through the tuyère. Residue of the coke after the test in the Suidgren drum does not characterize, with sufficient accuracy, the strength of the coke, which must be calcd. from data of changes in screen analysis. H. Z. Kamich

1751

SYKOV, F.I.

"The micro-hardness of fragile lumpy material"
pp. 239 of the monograph "Microhardness", Acad. Sci.
U.S.S.R. 1951

SYSKOV, K.I.

U S S R •

✓ A method for the determination of the bulk weight of lump material, taking into account the unfilled space near the apparatus walls. K. I. Syskov and K. M. Sadilenko. *Trudy Inst. Goryuch. i Khim. Akad. Nauk S.S.S.R.* 3, 78-80 (1954).—A method was developed to det. the unfilled space near the vessel walls in the detn. of bulk weight of coke by permitting a more accurate detn. of a unit vol. of the lump material and their bulk masses. A formula was derived for calcg. the bulk weight of metallurgical coke, which is best detd. in vessels of low inner surface.

W. M. Sternberg

USSR/Scientific Organization

FD-1105

Card 1/2 Pub. 41-17/17

Author : Syskov, K. I., and Kusakin, N. D. (1), Kupriyanov, V. P. (3)

Title : In scientific establishments of the Department of Technical Sciences
 of the Academy of Sciences of the U.S.S.R.

Periodical : Izv. AN SSSR. Otd. tekhn. nauk 4, 154-160, Apr 1954

Abstract : Describes activity of various scientific institutions in four articles:
 (1) "Seminar of the Institute of Mineral Fuels, Commemorating Academician
 N. P. Chizhevskiy" -- a report on a seminar held 14 May 1954 on
 the subject of IGI (Institute of Mineral Fuels) coke ovens developed
 (1948) on the basis of research done by N. P. Chizhevskiy. (2) "Con-
 ference on the Problem of the Mechanics of Cloth" -- a report on con-
 ference held March 1954, at Institute of Mechanics of the Academy of
 Sciences of the USSR, on construction, technology, and durability of
 cloth.

USSR/Scientific Organization

FD-1105 & 1106

Card 2/2 Pub. 41-17/17

Abstract : (3) "Conference on use of Local Building Materials for Agricultural Construction" -- a report on conference held March 1954 by Commission on Construction Problems and the All-Union Scientific and Technical Society of the Silicate Industry on ways of increasing the use of binding materials from local sources as slag, ashes, gypsum, and lime.
(4) "Works of the Institute of Mineral Fuels, Published in 1953" -- a report, including chapter titles, on two publications of the Academy of Sciences of the USSR: "An Investigation of Contemporary Principles for Coal Coking" (Issledovaniye sovremennykh printsipov koksovaniya ugley), Works of the Institute of Mineral Fuels, Vol. 1, Issue 1, 1953, 64 pp.
"The Chemistry and Origin of Solid Mineral Fuels" (Khimiya i genezis tverdykh goryuchikh iskopayemykh), Works of the First All-Union conference, 1950, Institute of Mineral Fuels, All-Union Chemical Society imeni D. I. Mendeleev, 420 pp.

Periodical : Izv. AN SSSR. Otd. tekhn. nauk 4, 154-160, Apr 1954

Institution :

Submitted :

SYSKOV, K.

"Scientific Bases for Improving the Quality of Coke." Tr. from the Polish. p. 146.
Praha, Vol. 34, no. 6, June 1954.

SO: East European Accessions List, Vol. 3, No. 9, September 1954, Lib. of Congress

Syskov, K.I.

Theory of coke behavior in the blast-furnace process.
K. I. Syskov. Freiberg. Forsch. A24, 24-31(1964); cf. ✓
(S. Teória zdučenja koksá v doménkovém průmyslu, 1949,
100 pp. (C.A. 47, 5098c)). O. Tarhan

SYSKOV, K.I.

Creative path of Academician N.P.Chizhevskii. Trudy IGI no.5:5-10'55.
(MIRA 8:11)

(Chizhevskii, Nikolai Prokop'evich, 1873-)

SYSKOV, K.I.

Scientific principles of improving coke quality. Trudy IGI 6:
188-197 '55. (Coke) (MLRA 9:7)

ANNENKOVA, V.Z.; DMITRIYEV, G.N.; SYSEKOV, E.I.; STRUKOV, A.N.

Metallurgical coke from Irkutsk basin coal. *East* Izv.vost.fil.AN SSSR
no.6:74-78 '57. (MLRA 10:9)

1. Institut goryuchikh iskopayemykh Akademii nauk SSSR.
(Irkutsk region--Coke)

68-7-7/16

A Comparative Evaluation of Methods of Testing Metallurgical Coke.

92-93% of 3 to 0 mm. Leaning components were additionally ground to 80-100% to 2 to 0 mm. The influence of stamping charges, oven width and heating practice on the coke quality were also tested. The results indicating the influence of the composition of coal blends, degree of crushing, method of charging and coking conditions on the coke quality are given in Tables 1, 2, 3 and 4 respectively. It was found that each method of testing coke gives different results for the individual quality indices which makes the comparison of the coke quality difficult. Changes in the composition of coal blend, methods of preparation and coking conditions cause a regular change in a number of coke quality indices in opposite directions. Indices of the amount of coke left in the standard drum test, mean coke sizes X_{mean} and X'_{mean} according to the usual and modified UXMN method, as well as indices of the yield of sizes above 40 mm in the Micum drum according to the UHM-4 epmet method and in the standard drum usually reflected the initial size distribution of coke which did not characterise the coke quality completely. The evaluation of coke on the basis of the coefficient of permeability of the MPM method gives a real determination of the changes in the coke

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68-7-7/16

A Comparative Evaluation of Methods of Testing Metallurgical Coke.

quality with changes in the composition of the coal blend and coking conditions (proposed grouping of the experimental cokes according to indices obtained by ИГМ test is given in Table 5). The use of the ИГМ method for the evaluation of the quality of coke produced from blends containing coals more readily available and under different coking conditions indicates that the coke quality can be improved with simultaneous broadening of the range of coals utilised for the production of blast furnace coke. There are 5 tables.

ASSOCIATION: IGI AN SSSR.

AVAILABLE: Library of Congress

Card

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SYSKOV, K.I.

24-7-14/28

AUTHORS: Annenkova, V. Z., Dmitriyev, G.N., Syskov, K.I. and Strukov, A.N. (Moscow, Irkutsk).

TITLE: Metallurgical coke produced from the coal of the Irkutsk-Cheremkhov Basin. (Metallurgicheskiy koks iz ugley Irkutsko-Cheremkhovskogo Basseyna).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.7, pp.113-115 (U.S.S.R.)

ABSTRACT: Enormous deposits of coal are available in Western Siberia. For producing coke from this coal it is necessary to add lean coal, since without such addition the produced coke is full of cracks. As a result of this the various research institutes controlled by the Ferrous-Metallurgy Ministry have proposed the use of coking charges containing up to 40% of coal from the Kuzbas. In this paper attempts are described of obtaining coke directly from the Irkutsk-Cheremkhov coal using as an admixture semicoke produced from the same coal. Laboratory tests by IGI during recent years established the possibility of obtaining metallurgical coke from coal of this origin; in coking charges of this coal with an addition of 15% semicoke a strong coke was obtained which had high quality indices during tests in a drum

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Metallurgical coke produced from the coal of the Irkutsk-Cheremkhov Basin. (Cont.)

24-7-14/28
proposed by Nikolayev, I.N. (1). For confirming the laboratory results coking was effected in the semi-coking plant in Cheremkhov where an experimental coking furnace with a charge capacity of 500 kg is installed. In co-operation with the Irkutsk Geological Directorate (Irkutskoye Geologicheskoye Upravleniye) and the Vostsibugol' Combine, coal was chosen which was extracted from the most promising deposits of the Irkutsk-Cheremkhov Basin. Table 1 gives the analyses of the various coals which were used in the experiments. Table 2 gives the composition of individual charges and the yield of various grades of coke. Table 3 gives the sieve analysis of cokes from eight series of experiments, whilst Table 4 gives quality data of coke obtained in the various series of experiments. The results of the experiments are favourable and the authors recommend further experiments on pilot plant scale and larger scale for the purpose of solving finally the problem of producing coke from this coal alone. There are four tables and 5 references, all of which are Slavic.

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SUBMITTED: September 22, 1956.

AVAILABLE:

68-9-7/15

Coking of Blends Containing a Considerable Proportion of Gas Coals from the Kuznetsk Basin.

temperature on the coke quality increases with increasing volatile content of the blends. It was also established that a good metallurgical coke can be obtained from blends containing a large proportion of gas coals from the Kuznetsk Basin, by using an appropriate crushing technique and coking practice. Coke quality indices, obtained from the Micum test, can be well correlated with the standard drum test. It was found that with preferential crushing a more uniform blend, in respect to the distribution of petrographic components and mineral substances in various size fractions, can be obtained. This, in turn, improves the coke quality. The following participated in the work: A.B.Gorbunov, M.P.Zabrodskiy, A.I.Rychenko and E.A.Detkova (from Novo Tagil'sk Coke Oven Works). There are 4 tables, 1 figure and 7 references, including 6 Slavic.

ASSOCIATION: Moscow Institute of Chemical Technology imeni D.I.Mendeleyev (Moskovskiy Khimiko-Tekhnologicheskii Institut im. D.I.Mendeleyeva).

AVAILABLE: Library of Congress.

Card 2/2

SYSKOV, K I

AUTHOR: None Given.

24-12-24/24

TITLE: Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division. (Yubileynnye nauchnye zasedaniya Institutov Otdeleniya Tekhnicheskikh Nauk)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1957, No.12, p.100. (USSR)

ABSTRACT: In October-November, 1957 various scientific sessions were held commemorating the 40th anniversary of the Soviet Revolution.
Institute of Mining. Academician L. D. Shevyakov read a paper on the mining science in the U.S.S.R. during the last forty years;
A. P. Sudoplatov read a paper on "Development of the Technology of Underground Coal Mining in the U.S.S.R.";
N. V. Mel'nikov read the paper "Development of Open Cast Mining in the Soviet Union";
M. I. Aroshkov read the paper "Scientific and Technical Progress in the Soviet Union during the Last Forty Years in the Field of Working Ore Deposits";
I. N. Plaksin read the paper "Beneficiation of Useful Minerals in the Soviet Union".

Card 1/5

24-12-24/24

Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division.

Institute of Mined Fuels. N. G. Titov read the paper "Forty Years of Soviet Science Relating to Solid Fuel"; K. I. Syskov read the paper "Soviet investigations of coking coal";

N. V. Lavrov read the paper "Soviet Research on Combustible Gases";

T. A. Kukharenko read the paper on the "Successes of Soviet Scientists in Studying the Chemical Structure and the Origin of Solid Mined Fuels";

N. M. Karavayev read the paper "Successes of Soviet Science in Obtaining Chemical Products and Liquid Fuel from Solid Fuel".

Institute of Mechanical Engineering. After the opening address of A. A. Blagonravov, Academician V.I. Dikushin dealt with "Automation of Technological Processes in Engineering";

F. S. Dem'yanyuk dealt with "Fundamental Problems of Automation of Technological Processes";

A. Ye. Kobrinskiy dealt with "Work of the Institute of Mechanical Engineering, Ac.Sc. U.S.S.R. in the Field of Programmed Control of Metal Cutting Machine Tools";

N. I. Levitskiy dealt with "The Theory of Synthesis of

Card 2/5 Mechanisms".

24-12-24/24

Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division.

Institute of Metallurgy imeni A. A. Baykov.

I. P. Bardin dealt with the "Technical Progress of Ferrous Metallurgy";

D. M. Chizhikov dealt with "Forty years of Soviet Metallurgy".

Institute of Mechanics.

P. Ya. Kochin dealt with the "Development of the Theory of Filtration in the Soviet Union";

V. Z. Vlasov dealt with "Modern Investigations in the Field of the Theory of Shells and Their Importance in Engineering and Civil Engineering";

A. A. Movchan dealt with "Auto-oscillation of plates in a flow";

Kh. A. Rakhmatulin dealt with "Investigation of Sectionally Stationary Wave Processes in Continuous Media";

V. V. Sokolovskiy dealt with "The Present State of the Statics of Loose Media and its Application to Technical Problems".

Oil Institute. N. I. Titkov dealt with the "Scientific Results of the Activity of the Oil Institute"

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24-12-24/24

Jubilee Sessions of the Scientific Institutes of the Technical Sciences Division.

Academician S. I. Mironov dealt with "Development of Oil Geology During the Last Forty Years";

M. F. Mirchink dealt with the "Increase of the Oil Resources of the Soviet Union During the Last Forty Years";

Academician A. V. Topchiyev dealt with "Certain Problems of the Oil-Chemical Synthesis";

A. P. Krylov dealt with the "Fundamental Principles of a Rational Working of Oil Deposits".

Institute of Radio Engineering and Electronics.

The Vice Minister for Telecommunications, Z. V. Topuria dealt with the "Development of Communications During the Forty Years of Soviet Rule", whilst Yu. I. Kaznacheyev dealt with "Wide-band long distance communications on wave guides of circular cross section".

Power Institute imeni G. M. Krzhizhanovskiy.

V. I. Veyts dealt with "Power Generation as a Factor of Developing the National Economy";

Academician M. A. Mikheyev dealt with the "Development of the Science of Heat Transfer During the Last Forty Years";

Card 4/5

CHIZHEVSKIY, Nikolay Prokop'yevich, akademik; KUSAKIN, N.D., kand.tekhn.
nauk, sestavitel' toma; BARDIN, I.P., akademik; SAMARIN, A.M.;
SYSKOV, K.I., doktor tekhn.nauk; TSYLEV, doktor tekhn.nauk;
CHERNYSHEV, D.M., red. izd-va; PRUSAKOVA, T.A., tekhn.red.

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akad. nauk
SSSR. Vol.2. 1958. 425 p. (MIRA 12:1)

1. Chlen-korrespondent AN SSSR (for Samarin).
(Coke) (Metallurgy)

C

CHIZHEVSKIY, Nikolay Prokop'yevich, akad.; KUSAKIN, N.D., kand. tekhn. nauk.;
BARDIN, I.P., akad., otv. red.; SAMARIN, A.M., red. SYSKOV, K.L., doktor
tekhn. nauk, red.; TSYLEV, L.M., doktor tekhn. nauk, red.; SHAPOVALOV,
I.K.; red. izd-va.; PRUSAKOVA, T.A., tekhn. red.

[Selected works] Izbrannye trudy. Moskva, Izd-vo Akad. nauk SSSR.
Vol. 1. 1958. 439 p. (MIRA 11:11)

1. Chlen-korrespondent AN SSSR (for Samarin)
(Metallurgy)
(Coke)
(Fuel)

AUTHORS: Syckov, K. I. and Angelova, G. K. 68-58-4-7/21

TITLE: The Behaviour of Sulphur in Coals During the Process of Their Thermal Treatment (Povedeniye sery kamennykh ugley v protsesse ikh termicheskoy obrabotki)

PERIODICAL: Koks i Khimiya, 1958, Nr 4, pp 23-27 (USSR)

ABSTRACT: The dynamics of evolution of the total and organic sulphur of various coals of different rank during coking were investigated. The evolution of sulphur was studied during heating 2 g samples of coals in a small glass retort. The properties of coals tested are given in Table 1 and the curves representing the course of sulphur evolution - Fig.1. In order to determine the influence of the individual forms of sulphur on the rate of its evolution during carbonisation, pyritic and sulphate sulphur was removed by treating coals with hydrogen (concentrated hydrochloric acid in the presence of zinc and insignificant quantities of chromium ions). The properties of coals before and after this treatment are shown in Table 2. This treatment had no influence on the dynamics of the evolution of sulphur (Fig.2). The relationship between the coal rank (volatile matter content) and

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68-58-4-7/21

The Behaviour of Sulphur in Coals During the Process of
Their Thermal Treatment

the proportion of sulphur removed during carbonisation (S volatile/sulphur total, %) is shown in Fig.3. It is concluded that processes of evolution of volatile sulphur compounds are related to processes taking place in the organic mass of coals during their carbonisation (changes in the structure of the coal substance). These processes and not the proportion of pyritic and organic sulphur, appear to be the main factor determining the degree of desulphurisation of coals during coking. It was established that the evolution of sulphur with coking products is independent from the ratio of the individual forms of sulphur in coal but dependent on its rank. There are 2 tables, 2 figures and 15 references, 4 of which are Soviet, 4 English and 7 German.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskii institut im.
D. I. Mendeleeva (Moscow Institute of Chemistry and Technology
imeni D. I. Mendeleev)

Card 2/2

1. Coal--Heating factors 2. Coal--Properties 3. Sulfur--Temperature

AUTHOR: Syskov, K. I. (Moscow)

SOV/24-58-5-24/31

TITLE: On the Process of Coking and Preparation of Coking of Coal by Selective Crushing (O protsesse koksovaniya i podgotovke k nemu ugley izbiratel'nym drobleniyem)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 5, pp 128-129 (USSR)

ABSTRACT: In Lorraine (France) use of this method enables utilising up to 50 to 70% of gas and long flame coal as raw material for coke. In this paper some Russian work on this subject carried out within the framework of the general theory of formation of lump coke is described. Existing methods of selective crushing are aimed essentially at eliminating from the coking particles exceeding 3 or 2 mm so as to increase the total surface of the coal particles to be coked. This results in obtaining a coke of a lower strength and a higher porosity. In order to obtain high quality coke from lean coal containing a considerable proportion of gas coal which has poor coking qualities, it is necessary to combine selective crushing with measures aimed at increasing the caking of the charge Card 1/3 during the coking. This can be done by preliminary

SOV/24-58-5-24/31

On the Process of Coking and Preparation of Coking of Coal by
Selective Crushing

densification of the coal as suggested by N. S. Gryaznov, I. L. Lazovskiy and M. G. Fel'brin or by increasing the speed of coking or by a combination of the two. Solely the application of a combination of the here mentioned three factors permits extending considerably the availability of raw materials for coking and using gas coal in larger quantities. Coking of coal particles and strengthening of the formed coke is accompanied by the formation of internal stresses and thus of cracks in the solid coke mass. Selective crushing of the coal particles favours a suppression of the process of crack formation during coking. This is due to the fact that in such charges the particle size does not exceed 3 mm and the coal mass is more uniform from the petrographical point of view as well as from the point of view of its chemical composition. Some of the data are given of the process of selective crushing of coal from a mine in Kuzbass and it can be seen that the greatest divergence in composition is obtained for the larger fractions. The lower quality of the coke produced in Eastern coking plants is attributed to a great extent to the non-uniform

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SOV/24-58-5-24/31

On the Process of Coking and Preparation of Coking of Coal by
Selective Crushing

petrographic composition of Kuznets coal as compared to Donets coal; the quality was improved by increasing the degree of crushing of the coal particles (94% passed through a 3 mm sieve). However, it is not considered advisable to increase the degree of crushing since this would reduce the caking ability down to the limit permissible values. Further improvement in the coke quality should be attained by increasing the coking speed, by preliminary densification (damping) and also by adding fat coal combined with selective crushing. There are 1 table and 2 Soviet references.

SUBMITTED: July 16, 1957

Card 3/3

68-58-7-9/27

AUTHORS: Verbitskaya, O. V., Candidate of Technical Science and
Syskov, K. I., Doctor of Technical Science

TITLE: ~~On~~ Thermal Stability of Coke (O termicheskoy ustoychivosti
koksa)

PERIODICAL: Koks i Khimiya, 1958, Nr 7, pp 30-33 (USSR)

ABSTRACT: The ability of lumps of coke to withstand destruction during heating to high temperatures is called the thermal stability of coke. The results of investigation of thermal stability of 10 samples of coke produced on the Kharkov coke oven works during experimental coking is described. The composition of experimental blends and their coking conditions are given in Table 1. The method of investigation was as follows: from 60-40 mm fraction of each coke type two samples were made from the same number of pieces of the same degree of readiness and of approximately the same degree of surface fissuring. One of each pair of samples was heated to 900°C at a rate of 10°/min and from 900 to 1400°C at a rate of 5°/min. At 1400°C the sample was soaked for 30 min. During heating, air was excluded by an 80-100 mm high layer of a carbonaceous material placed on top of the furnace

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On Thermal Stability of Coke

68-58-7-9/27

cover. Changes in the following factors before and after heating of each coke sample were measured: size distribution, surface fissuring, shrinkage and strength of coke (Tables 2 and 3). It was found that: the number of lumps in a sample after heating did not change, the degree of surface fissuring of the majority of cokes did not increase and linear shrinkage after reheating to 1400°C was not observed. The strength of coke was determined by dropping it onto a plate from a height of 1.8 m with subsequent screening into 50, 40, 25, 10 and 5 mm fractions after 2, 4, 8 and 12 droppings. It was found that a decrease in the mean diameter of coke due to thermal action was insignificant in comparison with changes caused by mechanical action. Changes in the mean coke size on heating were somewhat higher for cokes made from blends containing non-caking components. The strength of the coke material itself (free from fissure) after reheating generally increases. There were two exceptions in which it somewhat decreased. The hardness of the coke material increased after heating in all cases. As one of

Card 2/5 the possible factors causing some differences in the

On Thermal Stability of Coke

68-58-7-9/27

behaviour of various cokes on reheating could be the differences of the expansion coefficients of blend components, the linear expansion of specimens of laboratory coke produced from various types of coals at 1000°C was measured. On the basis of the value of linear expansion at 900°C and of the mean coefficient of linear expansion in the temperature range 0 - 900°C the cokes studied were divided into 4 groups (Table 4). The mean coefficient of linear expansion in the extreme cases differed by a factor 5-7. Thus, the value of stresses appearing in coke on secondary reheating depends on the differences in the expansion coefficients of the individual components of the blend. By finer grinding of high ash and non-caking components of a blend, the value of stresses generated on reheating can be reduced. The nature of fissuring depends strongly on the rate of reheating. The influence of the rate of reheating was demonstrated on laboratory samples of semi-coke obtained from various coal types at 500°C. Samples were divided into pairs and one of each pair was heated at a rate of 3°/min while the other one was shock heated by placing it

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On Thermal Stability of Coke

68-58-7-9/27

into a furnace heated to 1350°C. It was found that the appearance of fissuring and its extent in the same coke specimen depended on the rate of heating (Fig.). Shock heating of industrial cokes caused in all cases the appearance of new fissures. Conclusions: Thermal stability of coke is determined to a considerable extent by the relationship of two factors: the strengthening process of the coke substance itself, which has a positive effect on the preservation of its size, and weakening of lump coke due to the formation of micro and macro cracks which lead to a change in its size distribution. In respect of thermal stability cokes can be divided into two groups of a higher and lower thermal stability, associated with monolithic and conglomerate structure of coke respectively. Heating of coke samples to 1400°C indicated that the thermal destruction of coke is insignificant in comparison with its destruction by mechanical forces and therefore differentiating of monolithic cokes according to their thermal stability is of no practical importance for the

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On Thermal Stability of Coke

68-58-7-9/27

blast furnace process.

There are 4 tables and 1 figure.

ASSOCIATION: IGI AN SSSR

1. Coke--Thermal properties

Card 5/5

AUTHORS: Syskov, K. I., Verbitskaya, O. V. SOV/32-24-10-20/70

TITLE: A Pycnometric Method for the Determination of the Apparent Specific Gravity of Coke (Piknometricheskiy metod opredeleniya kazhushchegosya udel'nogo vesa koksa)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 10, pp 1224 - 1226 (USSE)

ABSTRACT: The apparent specific gravity usually is determined according to the volume of the weighed sample or according to the weight of the displaced fluid. The present method is based upon the direct reading of the values of the apparent specific gravity on the scale of a respectively graded pycnometer. A figure showing the pycnometer with the grading, and a description of the mode of operation are given. In the case of samples of equal weight and constant volume of the fluid contained in the pycnometer the level in the neck of the pycnometer will only depend on the amount of the apparent specific gravity of the coke. If the quantity of fluid is changed the volume computation can be applied for any interval of the apparent specific

Card 1/3

A Pycnometric Method for the Determination of the
Apparent Specific Gravity of Coke

SOV/32-24-10-20/70

gravity. In the description of the method of measuring it is mentioned that for coke of the dimension 6 - 13 mm which has been sifted and subjected to a determination of the moistness and to drying, 50 g can be taken with an accuracy of $\pm 0,01$ g. To judge the described method comparative determinations according to the paraffin method (Ref 1) and to the method by Ye.M.Tayts (Ref 2) were carried out; the results are given in tables. The investigations on the reproducibility showed that the standard deviation amounts to 0,0031. There are 1 figure, 2 tables, and 2 references, which are Soviet.

ASSOCIATION: Institut goryuchikh iskopayemykh Akademii nauk SSSR
(Institute of **Mineral Fuels**; AS USSR)

Card 2/3

ANGELOVA, G.K.; SYSKOV, K.I.

Effect of the organic sulfur content on the properties of coals.
Trudy MKHTI no.28:3-10 '59. (MIRA 13:11)
(Coal--Testing) (Sulfur--Analysis)

ALIPOV, N.Ye.; ZHDANKOVICH, L.N.; ~~SYSKOV, K.I.~~

Mechanism of the formation of coal granules. Trudy MKHTI no.28:
11-16 '59. (Coal) (MIRA 13:11)

DVORIN, S.S.; ZHITOV, B.N.; LERNER, R.Z.; MAKAROV, G.N.; SAZONOV, S.A.;
SYSKOV, K.I.

Coking of preheated coals as a method of intensifying the production
of coke and improving its quality. Trudy MKBTI no.28:28-37 '59.
(MIRA 13:11)

(Coal--Carbonization)

SYSKOV, K.I.; CHZHU TSZY-TSYAN' [Chu Tz'ü-ch'ien]

Selection of temperature conditions in the laboratory coke test.
Trudy MKHTI no.28:46-50 '59. (MIRA 13:11)
(Coke) (Coal--Testing)

ANGELOVA, G.K.; SYSKOV, K.I.

Study of the possibility of desulfurizing coals in the process of
coking by the action of hydrogen. Trudy MKHTI no.28:51-57 '59.

(MIRA 13:11)

(Coal--Carbonization)

(Sulfur)

SYSKOV, K.I.; FOMIN, A.P.

Determination of the ease of breakage and abrasability of coke.

Trudy MKHTI no.28:84-88 '59.

(MIRA 13:11)

(Coke)

5(2), 11(7)

SCV/156-59-1-43/54

AUTHORS:

Angelova, G. K., Syskov, K. I.

TITLE:

Investigation of the Possibility of **Converting the Organic Sulphur of Coals Into Calcium Sulphide on Their Coking With the Addition of Calcium Hydride** (Izucheniye vozmozhnosti perevoda organicheskoy sery ugley v sul'fid kal'tsiya pri koksovaniy ikh s dobavkoy gidrida kal'tsiya)

PERIODICAL:

Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 1, pp 166 - 168 (USSR)

ABSTRACT:

Papers by other authors dealt with the desulphurization of coal by the addition of CaO , CaCO_3 , or dolomite on coking. All of these procedures result in a high ash content of the coke. Calcium hydride, however, is quantitatively converted into sulphide without forming excess calcium oxide. At $400-500^\circ$, CaH_2 is decomposed into atomic hydrogen and calcium. In the experiments the CaH_2 additions were between 2.5 and 30% with respect to coal. Additions of more than 3.5%, however, proved to be ineffective. After coking the overall sulphur content and the sulphide sulphur content were determined. A table shows that the coals behaved differently,

Card 1/2

Investigation of the Possibility of **Converting** SOV/156-59-1-43/54
the Organic Sulphur of Coals Into Calcium Sulphide on Their Coking With
the Addition of Calcium Hydride

according to their individual deposits. One coal type yielded a high sulphide sulphur content after coking, and a corresponding decrease of organic sulphur (Diagram). The other type, however, resisted conversion. The organic sulphur content fell but little. Probably CaH_2 reacted only with sulphur which is set free in the temperature interval $400-600^\circ$ by the pyrolysis of coal from little stable compounds. Compounds that are not decomposed at these temperatures do not set free their sulphur. There are 1 figure, 1 table, and 6 references, 3 of which are Soviet.

ASSOCIATION: Kafedra tekhnologii pirogennykh protsessov Moskovskogo khimiko-tekhnologicheskogo instituta im. D. I. Mendeleeva (Chair of the Technology of Pyrogenic Processes of the Moscow Institute of Chemical Technology imeni D. I. Mendeleev)

SUBMITTED: June 28, 1958

Card 2/2

VERBITSKAYA, O.V.; SYSKOV, K.I.

Comprehensive investigation of shrinkage and liberation of volatile
matter in the thermal treatment of carboniferous materials. Trudy IGI
8:229-238 '59. (MIRA 13:1)
(Coal--Carbonization)

ZHDANKOVICH, L.N.; KOMAROVA, T.N.; SYSKOV, K.I.; BALASHENKO, V.A.

Possibility of producing granulated fuel for the power
industry from Irkutsk coal. Izv.Sib.otd.AN SSSR no.11:
32-37 '59. (MIRA 13:4)

1. Vostochno-Sibirskiy filial Sibirskogo otdeleniya AN SSSR.
(Coal)

SYSKOV, K.I.; TSZI LYAN [Chi Liang]

Investigating the segregation of ore and coal mixtures.
Koks i khim. no.2:5-9 '60. (MIRA 13:5)

1. Moskovskiy khimiko-tekhnologicheskij institut im.D.I.Mende-
leyeva.

(Coal preparation)

ANGELOVA, G.; SYSKOV, K.

Regarding the possible forms of organic sulfur in coal. Izv Inst khim
BAN 7:67-73 '60. (EEAI 10:9)

1. Moskovski khimikotekhnologicheski institut "D. I. Mendeleev" i
khimicheski institut pri BAN.

(Sulfur) (Coal) (Organic compounds)

ANGELOVA, G.; SYSKOV, K.

Influence of organic sulfur on the properties of black coal. Izv
Inst khim BAN 7:75-84 '60. (BEAI 10:9)

(Sulfur) (Coal) (Organic compounds)

YENIK, G.I.; DMITRIYEV, G.N.; BRESLER, A.Ye. [deceased] ; SYSKOV, K.I.

Coke from Irkutsk and Krasnoyarsk coals. Izv. Sib. otd.
AN SSSR no. 10:28-34 '60. (MIRA 13:12)

1. Institut goryuchikh iskopayemykh AN SSSR.
(Coke)

VERBITSKAYA, O.V.; PUT'KO, Yu.S.; SYSKOV, K.I.

Crushing of coal for coking. Koks i khim. no.1:18-21 '61.
(MIRA 14:1)

1. Institut goryuchikh iskopayemykh AN SSSR (for Verbitskaya,
Put'ko). 2. Moskovskiy khimiko-tekhnologicheskii institut im.
Mendeleeva (for Syskov).

(Coal preparation)

TANDURA, I., kand.tekhn.nauk; SYSKOV, L., inzh.

Investigating methods for the preheating of engines. Avt.transp.
40 no.2:18-19 F '62. (MIRA 15:2)

1. Sibirskiy avtomobil'no-dorozhnyy institut.
(Motor vehicles--Cold weather operation)

SPYAG, N.I.

PHASE I BOOK EXPLOITATION 307/3559

Al'met'ya, cauk SSSR. Institut metallurgii. Mashiny sovot po probleme zharcoprochnykh splavov

Ispol'zovaniya po termoprochnosti splavov. t. 5 (Investigations of Heat-Resistant Alloys. Vol 5) Moscow, Izdatvo AN SSSR, 1959. 423 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klishov; Tech. Ed.: I.P. Kuz'min; Editorial Board: I.P. Bardin, Academician, G.V. Kur'yakov, Academician, N.P. Aseyev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Odintsov, I.M. Pavlov, and I.P. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

CONTENTS: This book, consisting of a number of papers, deals with the properties of heat-resistant metals and alloys. Each of the papers is devoted to the study of factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and V on the heat-resisting properties of various alloys are studied. Deformability and variability of certain metals as related to the thermal conditions are the object of another study described in the problems of hydrogen embrittlement, diffusion and the deposition of metal coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Other papers describe the critical examination and evaluation. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of tubular and compressor blades are described. No personalities are mentioned. References accompany most of the articles.

Lenskaya, K.A., R.M. Kiryeva, and K.N. Gorobayeva. Et 756 Austenitic Steel	19
Rimshin, I.P., Z.A. Shvachkova, G.Ma. Kostalankin, M.Ki. Kerpich, and B.E. Mikhlin. Et 694 Heat-Resistant Chromium-Nickel-Titanium Steel	25
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45

SEKHOV, I. I.: "Methods of increasing cold resistance and reducing maturation time in the selection of tomatoes." All-Union Order of Lenin Academy of Agricultural Sciences ineni V. I. Lenin. All-Union Inst of Plant Growing. Leningrad, 1956. (Dissertations for the degree of Candidate in Agricultural Sciences).

SO: Koishmaya letopis' No. 22, 1957

USSR/Cultivated Plants - Potatoes, Vegetables, Melons.

11.

Abs Jour : *Tr. zhurn. - Biol.*, No 10, 1959, 44115

Author : Syskora, H.V.

Inst : ~~Tr. zhurn. - Biol.~~

Title : The Effect of Temperature During the Formation and Ripening of Tomato Seeds on Increased Resistance to Cold Succeeding Generations.

Orig Pub : *Tr. ps prikl. botan., genet. i selektsii*, 1957, 31, No 2, 102-110

Abstract : Completing the ripening of the fruit of 15 varieties at the temperature of 6-7° contributed to the germination of the seeds from these fruits at temperatures of 7-9°. A similar effect was observed when using seeds from the fruit of late periods of ripening at the average ten-day temperature of 8-10°. In the succeeding generation the greatest effect of lower temperature was shown on the unformed seeds

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SYSKOVA, M.V.

Comparative evaluation of tomato varieties on the basis of their
cold resistance. Trudy po prikl. bot., gen. 1 ser. 32 no.3:181-192
'59. (MIRA 14:5)

(Tomatoes--Varieties)

(Plants--Frost resistance)

MATISEN, V.A. . kand.pedagogicheskikh nauk; SYSKOVA, M.V.

Conducting an excursion on the topic "Field weeds." Biol. v shkole.
no.3:17-20 My-Je '62. (MIRA 15:7)

1. Leningradskiy pedagogicheskiy institut imeni A.I. Gertsena.
(Weeds) (School excursions)

07020,11

P/015/61/000/002/001/002
A107/A126

AUTHOR: Mieczysław Sysło

TITLE: Determination of porosity by the gas flow measuring method at low pressure

PERIODICAL: Szkło i Ceramika, no. 2, 1961, 39 - 41

TEXT: The author describes the history of the theories of H. Darcy, Dupuit, Poiseuille, Hagen, Dalton, Boltzmann, Clausius, Maxwell and Smolukhowski. Because of difficulties in the kinetic-molecular theory the research was based on the empiric way of floating mechanics. The actual state of science in this field could be found in papers of L. Prandtl, Carman, Arzanikov, Maltsev and others. The author stresses the common feature appearing in nearly all formulae, the coefficient of proportion, obtained in experimental way, which is nearly static, and quoting a series of possibilities of choice of proper values related to each situation. This procedure is unsatisfactory but unavoidable. The new theory of similarity grows in importance, is simple and clear. This way enables the classification of theoretical models used in fluid mechanics. A model based on functional conjunction and related to gas flow under lower pressure is described. This model

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Determination of porosity by the gas flow ...

consists of straights put parallel to the capillar flow. The equations are no more series of possibility coefficients. Flow conditions are used to establish certain static data of materials for testing purposes, to be applicable as measurement values of each given trial unit. Verifications of those equations were worked out on fine-grained sand samples. Microscopic measurements showed a satisfactory conformity of these tests. For dry air a unit of 29.3 atomic mass is applicable. For establishment of the surface and porosity the following values are necessary: mass of gas particles, its pressure before and after tests, amount of gas flow through the test sample during 1 sec expressed in milliliters, over temperature T and pressure p, cross-sectional surface of the test sample, and length of the cuvette. The test was carried out in the following way: during the work of pumps the gas flow was controlled by aid of microcrane according to

$$V < \Delta S \cdot K \cdot \frac{T}{p} \cdot P$$

where V = gas quantity expressed in ml under mentioned conditions; and ΔS = cross-sectional surface of the sample; K = fixed value equal to

$$1/3 \sqrt{\frac{2R\pi}{3M}}$$

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Determination of porosity by the gas flow ...

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where R = fixed gas value (in CGS system), and M = mass particle of the gas flow expressed by

$$P = \frac{p_1}{T_1} \left[\sqrt{T_1} \sqrt{\frac{T_1}{p_1^2} - \frac{T_2}{p_2^2}} - \left(\frac{T_1 \sqrt{T_1}}{p_1} + \frac{T_2 \sqrt{T_2}}{p_2} \right) \right]$$

where, p_1 = gas pressure before the test, p_2 = gas pressure after the test, T_1 = gas temperature after the test and T_2 = gas temperature before the test. More complicated are formulae for nonisothermic flow ($T_1 \neq T_2$) but they enable the introduction of static values of the material. If the difference of temperatures before and after tests is not surpassing $10^{-30}C$, the flow is isothermic. These flows are subject of a special paper. The anisotropy is not existing in sand bodies porosity and is independent from the direction of measurements. There is 1 figure and 10 references: 3 Soviet-bloc and 7 non-Soviet-bloc. The reference to the English-language publication reads as follows: P. C. Carman - Flow of gases through porous media. London 1956. ✓

Card 3/3

SYŚLÓ, M.

P/015/61/000/002/002/002
A107/A126AUTHOR: Mieczysław Sysło

TITLE: Theoretical investigations of foam glass macrostructures

PERIODICAL: Szkło i Ceramika, 1961, No. 2, pp. 44 - 45

TEXT: Foam glass is an elastic structure, whose pore spaces are formed by gas bubbles. There are three types of porous structures formed by: 1) spherical gas bubbles and divided by glass mass; 2) kidney-shaped gas bubbles originating from perforation of neighbour glass walls; and 3) gas bubbles of various size united in various directions forming capillary "endless channels". The investigations are based on the quantity and quality functions of spherical pore space units of 1 m^3 volume expressed by

$$n(\lambda) = \frac{\lambda^2 + 2r\lambda + 4r^2}{6\pi r^2 (\lambda - 2r) \lambda^3} \left[\frac{2\lambda^2 - r\lambda - 6r^2}{2\lambda} + \frac{3\lambda^2 + 7r\lambda - 2r^2}{3\lambda^2} \sqrt{\lambda(\lambda - 2r)} \right] + 2r \ln \frac{2[\lambda - r] - \sqrt{\lambda(\lambda - 2r)}}{\lambda} \quad (1)$$

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Theoretical investigations of foam glass ...

P/015/61/000/002/002/002
A107/A126

where: n = number of spheres with a radius r on 1 m^3 and λ = average distance between the sphere centers. The above initial structure represents the type 1 from which types 2 or 3 are developed. The density of foam glass d_o and the density of glass d_m is $d_o < d_m$ and can be expressed by

$$d_o = \frac{m(1 - 4/3 \cdot \pi r^3 n)}{V} = d_m (1 - 4/3 \cdot \pi r^3 n)$$

where r = mean radius of bubbles and n = quantity of bubbles on 1 cm^3 . For the given d_o the result $r^3 n$ is constant, whereas r can be different. At higher r values n should be lower so that $r^3 n$ remains constant and equal to $\frac{3(d_m - d_o)}{4\pi}$. At excessive growth of r , the system is no more foam glass. The quantity of gas bubbles on 1 cm^3 depend on the values γ and λ and therefore are depending on the unification ability i.e. the transformation of structure 1 to structures 2 or 3. The limits of the porosity ϵ of the structure type 1 are based at $0 < \epsilon < 0.25$ in Eq. 1 and can be expressed by

$$\lim_{\lambda \rightarrow 2r} n(\lambda) = \frac{3}{16\pi r^3} \quad (2)$$

This equation determines the maximum theoretical glass foaminess of the structure

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A107/A126

Theoretical investigations of foam glass ...

1. If the quantity of gas bubbles on 1 cm³ of one bubble i.e. $\frac{3}{4\pi r^3}$ the result $\frac{3}{16\pi r^3}$ is multiplied by the vol- shows the total volume of gas in 1 cm³

$$\frac{3}{16\pi r^3} \cdot \frac{3}{4\pi r^3} = 1/4 \text{ cm}^3$$

This shows that in structure type 1 maximum one fourth of the total glass volume is formed by gas bubbles, i.e. the maximum porosity is $\epsilon = 0.25$. If the quantity of bubbles exceeds the limits given in Eq. 2, the function $n(\lambda)$ is no more valid, because the porosity would reach $\epsilon = 0.52$ which increase causes the unification of bubbles, i.e. the formation of structures type 2 or 3. As the structure does not increase the porosity, but minimizes their mechanical capacity, structures type 3 should be obtained without the medium of reaching structure type 2. High mechanical capacity, but low porosity is reached by structure type 1 at a specific weight lower than $3/4 d_m$. For the quantity of bubbles

$\frac{3}{16\pi r^3}$ to $\frac{1}{8 r^3} \text{ dn } 1 \text{ m}^3$ the porosity is 0.25 to 0.52 and the specific weight from $3/4 d_m$ to $(1 - \frac{\pi}{6}) d_m \approx 0.48 d_m$. Only structure 3 guarantees high porosity ($\epsilon > 0.52$) and low specific weight.

Card 3/3

SYSLO, Mieczyslaw

Form coefficient of spatial bodies. Geodezja AGH no.4:23-34 '63.

1. Department of Inorganic Chemistry, School of Mining and Metallurgy,
Krakow.

SYDOLIN, K.G., kand. med. nauk

Treatment of keloid cicatricus with ultra-soft X-rays. Vest.
derm. i ven. 38 no.8:61-64 Ag '64. (MIRA 18:8)

1. Institut vrachebnoy kosmetologii (dir. A.F. Akhmedadze)
Ministerstva zdravookhraneniya RSFSR, Moskva.

SYSOLIN, P.V., inzh.

Investigating fertilizer spreaders operating on the principle of
a free outflow of fertilizers. Mekh. i elek. sots. sel'khoz.
21 no.5:48 '63. (MIRA 17:1)

1. Khar'kovskiy institut mekhanizatsii i elektrifikatsii
sel'skogo khozyaystva.

PERSHUKOV, A.A.; SAFONOV, S.V.; Primali uchastiye: SYSOLYATIN, S.A.;
CHAPLYGINA, Ye.M.

Dressing of titanium-zirconium sands. Titan i ego splavy no.8:
8-13 '62. (MIRA 16:1)
(Titanium ores) (Zircon) (Ore dressing)

SYSOLYATIN, S.A.

Obtaining high-grade titanium concentrates by flotation. Titan i
ego splavy no.9:24-28 '63. (MIRA 16:9)
(Titanium ores) (Flotation)

SYSOLYATIN, S.A.

Dressing of rutile-garnet ores. Titan i ego splavy no.9:29-35
'63. (MIRA 16:9)
(Titanium ores) (Ore dressing)

S/137/62/000/004/181/201
A154/A101

AUTHORS: Glizburg, I.L., Kitaygorodskiy, Yu.I., Krasnov, I.I.,
Radzeyevskaia, Ye.V., Sysolin, G.V.

TITLE: Ultrasonic welders

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 71, abstract
4E398 (Sb. "Primeneniye ul'trazvuka v tekhnol. mashinostr."
no. 2, M., 1960, 162 - 170)

TEXT: A detailed examination was made of the design of the following
ultrasonic welders: the Y3CM-1 (UZSM-1) for spot-welding sheet metal; the
Y3CA-3 (UZSA-3) for welding sheet parts in structures with large planes or
profiled surfaces; the Y3CA-4 (UZSA-4) for spot-welding sheet parts in large
items; the Y3CM-2 (UZSM-2) for seam-welding sheet metal. The technical charac-
teristics of each welder are given.

V. Tarisova

[Abstracter's note: Complete translation]

Card 1/1

SYSOLIN, Konstantin Georgiyevich, kandidat meditsinskikh nauk; PLOSHTEYN, Ye.A., redaktor; SACHEVA, A.I., tekhnicheskii redaktor.

[How to preserve the beauty of skin, face and hair] Kak sokhranit' krasotu kozhi litsa i volos. Moskva, Gos.izd-vo med.lit-ry, 1956.
55 p. (Beauty, Personal) (MIRA 9:6)

C A

Increasing the effectiveness of dry magnetic separation.
S. A. Sysolyatin. *Gornyi Zhur.* 125, No. 11, 37-9 (1951). —
Clean sepd. is greatly impaired by mixed sizes of the material being sepd. and the resulting attenuation in the effectiveness of the magnetic field. Size classification is impractical. The advantages of sizing is obtained by either providing a breaker plate at the discharge of the ore from the feeder or by directing the discharge end of the feeder opposite to the direction of rotation of the separator. Either of these measures will arrange the feed in a manner that the larger particles will be nearest the separator and the smaller will lie on top. This greatly improves magnetic sepd.
M. Hosh

54504/14711/5 A

DEPARTMENT OF STATE INFORMATION

SOV/137-58-11-21870

Translation from Referativnyy zhurnal, Metallurgiya, 1958, Nr 11, p 4 (USSR)

AUTHOR: Sysolyatin, S. A.

TITLE: Results of Concentration of Titaniferous Ores (Rezultaty obogashcheniya titansoderzhashchikh rud)

PERIODICAL: Tr. N. -i. i proyekt. in-ta "Uralsmekhanobr", 1957, Nr 1, pp 106-115

ABSTRACT: The following concentration flowsheets have been developed: 1) Magnetic separation with coarse grinding yielding a bulk titanium-magnetite concentrate; 2) magnetic separation with secondary separation after comminution to 0.1 or 0.2 mm undersize, yielding an Fe-V concentrate and a Ti intermediate; 3) flotation of the Ti intermediate yielding a conditioned Ti concentrate after two secondary separations. Selectivity is assured by employing an acid medium and fluoride reactants. Rutile is recovered in a separate concentrate by grinding the ore to 0.1 mm, concentration on the table, and secondary magnetic separation of the gravitation concentrate (at 7000 oersteds). The concentrate contains 96% TiO_2 , 40% of the TiO_2 being extracted, and the concentrate yield being 0.9%. The sands of placer deposits contain useful minerals in the 0.2 mm undersize. The sands may be concentrated by washing

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SOV/137-58-11-21870

Results of Concentration of Titaniferous Ores

and concentration on the table, the result being a bulk concentrate (ilmenite, rutile, zircon). A method of selective flotation yielding Ti and Zr concentrates is developed. The Ti concentrate may subsequently be magnetically separated into ilmenite and rutile. This procedure yields a rutile concentrate with 90% TiO_2 , of which 30% is recoverable, an ilmenite concentrate with 52% TiO_2 , of which 60% is recoverable, and a Zr concentrate containing 64% ZrO_2 , with 80% of the ZrO_2 recoverable.

L. K.

Card 2/2

18(5) SOV/127-59-2-15/21
AUTHORS: Visloguzov, V.M., Engineer, and Sysolyatin, S.A.,
Engineer (Uralsmekhanobr, Sverdlovsk)

TITLE: On the Recovery of Titanium in the Dressing Process
of the Titanium-Magnetite Ores of the Deposits at ~~Kachka-~~
~~narsk~~ (Iz vlecheniye titana pri obogashchenii
titano-magnetovykh rud Kachknarskogo mestorozhdeniya)

PERIODICAL: Gornyy zhurnal, 1959, Nr 2, pp 65-68 (USSR)

ABSTRACT: The authors show how experiments, carried out in
the Uralsmekhanobr proved that it is possible to
obtain titanium concentrate from the titanium-mag-
netite iron-ore of Kachkanar, by applying the meth-
od of stage enrichment. Only a certain quantity
of the second-stage tailings containing ilmenite is
processed. The gradual grinding of the ore went
thru the following stages: 1 to 0 mm, 0.5 to 0 mm,
0.2 to 0 mm, 0.1 to 0 mm. The first separation
supplies 2 kinds of dust: a) magnetite (ferro-
vanadium); b) ilmenite tailings containing titanium.
A shaking table separated out the titanium concen-

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SOV/127-59-2-15/21

On the Recovery of Titanium in the Dressing Process of the Titanium-Magnetite Ores of the Deposits at Kachkanar

trate, which in its turn was lead into a separator having a 6,000 oersted - strong magnetic field. The final products were: Fe (63.0%), TiO_2 (24.8%) and V_2O_3 (53.20%). The authors admit that the industrial level, the flotation method will probably be necessary to obtain high-grade titanium concentrate. A flotation method suitable for ilmenite has been successfully developed in the **Kusinskiy ore-dressing plant**. A flotation method suitable for recovering titanium from poor titanium ores, was used in **this** industrial experiment, at Kusin, where 400 tons of ore from the 2nd local deposit area were processed. The ore contained 1.88% rutile. The concentrate had 80% rutile. The refuse contained only 0.25 to 0.30% rutile. F.K. Solomonova, a scientist working in the mineralogical laboratory

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