

Ko Koley, G. V.

15
 853. Life of ladle linings. — G. V. Kukolny and K. F. Vasil'eva (*Ogneupor*, 21, 347, 1956). In Russian. Fused and basic refractory crucibles were tested. At 1,200° the crucibles were upturned and the flow of slag through a 10-mm. hole was measured at temperatures up to those encountered in steel-casting. The temperature was raised over a period of 4-5 hr. and then maintained (1,500°, 1,550° and 1,600°) for 1-2 hr. Corrosion of firebricks was found to decrease considerably if 10-20% of calcined clay or fireclay powder was added to the slag. If 30-40% of this material was added, the crucible remained practically uncorroded. This indicates a possible method of reducing the wear of ladle-bricks. (6 figs., 3 tables.)

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 Metals

10M

KUKOLEV, G.V., professor, doktor tekhnicheskikh nauk; MEL'NIK, M.T.,
kandidat tekhnicheskikh nauk.

Effect of oxides forming solid solutions in dicalcium silicate
on the properties of portland cement clinkers. Tsement 22 no.1:
16-19 Ja-F '56. (MLBA 9:6)
(Portland cement) (Solutions, Solid) (Oxides)

KUKOLEV, G.V.

Petr Petrovich Budnikov. Zhur.prikl.khim. 29 no.1:3-6 Ja '56.
(MLBA 9:5)

(Budnikov, Petr Petrovich, 1885-)

KUKOLEV, G.V.

L2697

Chem

ON LIQUID SINTERING OF ALKALINE EARTH OXIDES OF DOLOMITE G. V. Kukolev and L. A. Arystan'yanskaya (All-Union Institute of Refractory Materials) Zhur. Priklad. Khim. 29, 1862-11 (1986) Oct. in Russian

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Effects of fusion on the sintering properties of dolomite basic oxides were investigated. Compositions, kinetics and calculations were studied of various systems containing CaO and MgO at calcination temperatures up to 1200°C. It was found that only the admixtures of oxides whose interacting energies between cations and oxygen were within the range of 9.4e³ to 1.9e² produced favorable effects on the sintering of mixtures rich in CaO and in mixtures of Ca and Mg oxides. (R.V.J.)

Refer also to abstract 2851.

DM

Kukolev, G. V.

The problem of the stabilization of Ca_2SiO_4 G. V. Kukolev and M. T. Mejn'nik. Doklady Akad. Nauk S.S. S.R. 169, 1012-14 (1966).—Addns. of P_2O_5 , V_2O_5 , Cr_2O_3 , or

2 1 PM

BaO to the raw mix of a portland-cement clinker hinder the dusting by the inversions of α - and β - $\text{Ca}_2\text{SiO}_4 \rightarrow \gamma$ - Ca_2SiO_4 , but they also improve the mech. strengths of the hydraulic binders; the stabilized "belite" has defective cryst. structure and therefore is chemically activated. The expts. of the authors are on a systematic series of synthetic clinkers in which addns. of the stabilizing oxides mentioned before, mixed with other oxides, viz. Na_2O , K_2O , Al_2O_3 , MgO , or Fe_2O_3 , were introduced. The electrostatic valence rule is always kept const. in these mixes. The stabilization effects are always observed for these complex mixes at lower burning temps. than for clinkers to which only one stabilizer agent was added. Oxides which are known as "negative" stabilizers, e.g. Na_2O and Fe_2O_3 , behave in the mixes with pos. stabilizing agents like those. Ca_2SiO_4 stabilized with $\text{BaO} + \text{P}_2\text{O}_5 + \text{Fe}_2\text{O}_3$ shows higher n in the cryst. soles, than pure Ca_2SiO_4 ; no glasses are formed in the mixes.

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W. Eitel

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KOKOLEV, G. V.

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The use of surface-active agents in the plastic extrusion process for producing ceramic ware [50]. V. Kokolev and N. Korol (V. I. Lenin Polytch. Inst., Kharkov). *Sivka* [1957], 14, No. 9, 14-17 (1957).—With the use of a variable-speed lab. extrusion press provided with a recording wattmeter the effects of the addn. of various surface-active substances to clay (fireclay, kaolin, and brick clay) batches with 27-36% water content were detd. in terms of rates of extrusion as functions of the wattage input. Addns. of the following agents in the order of 0.05% to 0.25% of the wt. of the clay were made: (a) Na oleate, (b) AlCl₃, (c) control (no addn.), (d) sulfite waste liquor, (e) straw ext., (f) Na₂CO₃, (g) sulfite liquor plus Na₂CO₃, (h) lignite ext., and (i) straw ext. With addn. of these substances in the order given the power demand per unit of product and the value of the ratio G/S , where G is the frictional resistance to extrusion and S the surface area of 1 g. of the clay, are reduced, whereas the water-carrying capacity of the clay and the output of the press are raised, the latter by 20% in most cases except with Na oleate where it is reduced by a like amt. For example, data plotted for clay samples contg. the above additives show that for an extrusion rate of 135 kg./hr. 280, 378, 240, 210, 200, 203, 195, 102, and 184 w., resp., are necessary. The tensile strength of the piece after firing at 900° is raised from 25 to 50%. The phenomena observed are discussed from the standpoint of the effects of these agents on the adsorbed water films.

H. L. Olin

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137-58-4-6492

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 4, p 23 (USSR)

AUTHORS: Kukolev, G. V., Zelenskaya, A. T.

TITLE: Proper Granular Constitution of Burnt Dolomite (O ratsional'nom zernovom sostave obozhzhennogo dolomita)

PERIODICAL: Byul. nauchno-tekhn. inform. Vses. n. -i. in-t ogneuporov, 1957, Vol 2, pp 73-83

ABSTRACT: The unit weight of the uncompressed dry granular material and the angle of repose of a mixture of 3 fractions of commercial burnt metallurgical dolomite (MD) was determined. The grain-size fractions were 20-12, 12-4, and 4+1 mm. The best results in terms of dry granular material weight (up to 1.93 g/cm³) were obtained for a mixture containing up to 20% of the 1-4 mm fraction. As grain size in the mixture rose, the angle of repose of the MD increased, attaining 29-30°. The velocities required for MD grains of the 0.5, 1.2 and 3 mm classes to "hover" were determined experimentally and by calculation. It was established that at the common rates of motion of the gases in the smelting space of an open-hearth furnace (10-15 m/sec), carry-off of MD grains is not to be expected if they

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137-58-4-6492

Proper Granular Constitution of Burnt Dolomite

are ≥ 2 mm in size. A verification of the tendency of granular MD to hydration for 6-75 days showed that a mixture containing 20% 1-4 mm grains shows only 0.34% hydration in 40 days. At the Makeyevka Iron and Steel Mill, the walls and banks of 55-, 110-, and 130-t open hearth furnaces were provided with MD of the indicated grain composition. The MD consumption proved to be 25.2 kg/t steel, as against 32.2 kg/t for dolomite of 12-20 mm grain size. This work served as the basis for a re-examination of the engineering specifications for MD, with the result that the minimum grain size was lowered from 4 to 2 mm, yielding a 10-20% increase in the production of salable MD at dolomite plants.

S. G.

1. Dolomite--Properties--Determination

Card 2/2

KUKOLEY G. V.

AUTHOR: Fel'dgandler, G.G.

131-12-8/9

TITLE: Short Reports (Kratkiye soobshcheniya). Conference of the Scientific-Technical Council of the Institute for Refractories in Khar'kov (Sessiya nauchno-tekhnicheskogo soveta instituta ogneporov v Khar'kove)

PERIODICAL: Ogneupory, 1957, Nr 12, pp. 567-568 (USSR)

ABSTRACT: This conference took place on October 28/30, 1957, and was attended by many representatives of scientific institutes and the corresponding industries. Reports were heard on various problems connected with refractories, of which the following met with the greatest interest: 1.) Professor Karyakin, L.I., head of the petrographical laboratory of the Khar'kov Institute for Refractories, spoke about the results obtained by research work connected with kaolins and clays of the Ukraine. 2.) I.G. Orlova, Candidate of Technical Sciences, gave a report on the research work carried out concerning sintering and swelling up of refractory clays and kaolins when heated. 3.) T.S. Ignatova, scientific collaborator of long standing of the Ural department of the Leningrad Institute for Refractories, delivered a report on the results obtained by laboratory work as well as by the industrial testing of the rational utilization of primary kaolin found in the Kyshtym deposits and of the semiacid clays discovered in the Ural deposits.

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131-12-8/9

Short Reports. Conference of the Scientific-Technical Council of the Institute for Refractories in Khar'kov

4.) A.P. Sarmin, head of the Geological Laboratory for Raw Materials of the Leningrad Institute for Refractories, spoke about the geological and technological characteristics of the kaolin-hydrate gillite raw material found in the Arkalyk deposits in the Kazakh SSR. 5.) Professor G.V. Kukolev and his collaborator (Khar'kov Institute for Refractories), investigated the influence exercised by additions upon the sintering of kaolins. 6.) O.M. Margulis, the scientific collaborator of the Khar'kov Institute for Refractories, gave a report on the technology of the production of the testing of unburnt kaolin products in practice, the durability of which in furnaces is often greater than that of burnt ones. Finally, quite an amount of work was mentioned which ought to be carried out.

ASSOCIATION: Ferrous-metallurgical Department of the State Planning Committee of the RSFSR (Otdel chernoy metallurgii Gosplana RSFSR)

AVAILABLE: Library of Congress

Card 2/2

KOROLEV, G. V.

18 21
Mineralizer composition, orthoforsterite from natural raw materials. G. V. Korolev and S. I. Stechevlov (V. I. Lenin Polytech. Inst., Kharkov). *Doklady Ak. Nauk SSSR* 193-8(13) 1967

For a min. slag content and a max. efficiency as checker-work brick in regenerative chambers, forsterite brick must have a min. porosity and the firing temps. must be not exceedingly high. K. and S. attempted to obtain 10% of mineralizer from natural raw materials. They obtained lumps (calcined at 1400°C) which were not suitable. With addition of 10% of mineralizer, the products were well in the furnace.

were in some samples used to calcine at 1400°C. The SiO_2 in the raw materials and to bring the compn. to the stoichiometric forsterite formula. The products were tested by standard methods for refractories. The mineralizers greatly improve the d. of the products and considerably reduce the firing temps. The products obtained with mineralizer particularly disperse the pores.

Microscopic examination showed that the products obtained with mineralizer are more porous than those obtained without mineralizer. The products obtained with mineralizer are more porous than those obtained without mineralizer.

introduction of B_2O_3 , it is recommended that mineralizer (Mg borate) are be used. P_2O_5 may be introduced as a common phosphate fertilizer, natural phosphate is better.

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18 21

KUKOLEV, G.V.

"Porcelain". (An introduction to porcelain technology). By P.P. Budnikov,
Kh. O. Gevorkian. Reviewed by G.V. Kukolev. Zhur.prikl.khim. 30 no.2:
333-334 F '57. (MLRA 10:5)

(Porcelain) (Budnikov, P.P.)
(Gevorkian, Kh.O.)

KUKOLEV, G. V. and M. T. MEL'NIK

"Synthesis and Properties of the Bi-calcium Silicate" p. 407

Transactions of the Fifth Conference on Experimental and Applied Mineralogy and Petrography, Trudy ... Moscow, Izd-vo AN SSSR, 1958, 516pp.

reprints of reports presented at conf. held in Leningrad, 26-31 Mar 1956. The purpose of the conf. was to exchange information and coordinate the activities in the fields of experimental and applied mineralogy and petrography, and to stress the increasing complexity of practical problems.

SOV/81-59-9-32088

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 9, p 358 (USSR)

AUTHORS: Kukolev, G.V., Kivin, D.I., Zelenskaya, A.T., Lur'ye, M.A., Minskiy,
Ya.M.TITLE: Magnesite-Dolomite Highly-Refractory ProductsPERIODICAL: Sb. Nauchn. tr. Vses. n.-1. in-ta ogneporov, 1958, Nr 2 (49),
pp 277 - 296

ABSTRACT:

The manufacture of magnesite-dolomite products from clinkers with various content of dolomite (D) and magnesite (M) in the raw material mixture of the clinker has been studied. Satka M and Karagay D served as raw material; for binding CaO, crystalline quartzite and iron scale were introduced; for the stabilization of β -2CaO · SiO₂ an addition of phosphorite ore was introduced. The composition of the magnesite-dolomite charge was so calculated that a high (~1) coefficient of saturation with lime was obtained. Four charges were prepared: I - the ratio of M to D = 1:1; I^F - the same with an increased content of scale, II and III with the ratio M to D = 1:2 and 2:1, respectively. Dried briquets from charges I, I^F and II were burnt in the rotating furnace

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Magnesite-Dolomite Highly-Refractory Products

SOV/81-59-9-32088

at 1,710 - 1,760°C and from charge III in the periodic furnace at 1,600°C; the burnt briquets were ground and from the powders (the grain composition is cited) products were formed and burnt: from charges I, I^F and II at 1,430°C, from charge III at 1,460°C. A part of the raw bricks were left for hydraulic hardening for obtaining bricks without burning. The bricks from all the charges, in spite of the low burning temperature, have a high density (porosity 8.12 - 14.1%), high mechanical resistance (σ_{comp} 1,050-1,310 kg/cm²) and a high temperature of deformation under load (the beginning of softening in I, I^F and II takes place at 1,670, 1,540, 1,630°C, respectively, in III at 1,700°C softening did not begin). The content of highly-refractory phases was 86 - 88%. After a storing of 75 days, bricks without burning have also a high deformation temperature (in III there was no deformation at 1,700°C). The test of magnesite-dolomite bricks carried out in the laying of columns of the front wall of 30-t open-hearth furnaces has shown that these bricks are a completely suitable refractory material for them.

V. Zlochevskiy

Card 2/2

21-58-5-21/28

AUTHORS:

Kukolev, G.V. and Pitak, N.V.

TITLE:

Water Retention Properties of Kaolin, Bentonite and Faience Masses (Vodouderzhivayushchaya sposobnost' kaolina, bentonitov i fayansovykh mass)

PERIODICAL:

Dopovidi Akademii nauk Ukrain's'koi RSR, 1958, Nr 5, pp 549-553 (USSR)

ABSTRACT:

The authors describe their experiments in determining the water retention properties of various materials, such as kaolin, bentonite obtained from different regions, clay and faience masses. The experiments have shown that bentonite possess the greatest retainability. These experiments were carried out under various pressures and their results are represented by graphs showing the amount of water (V) plotted, versus the pressure applied (P). The P-V curves of kaolin suspensions and faience masses show horizontal or sloped sections in certain ranges of pressure. Peptizers increase the water retention properties of pure kaolin and bentonite suspension at all pressures, as well as their mixtures, and of faience masses at low pressure (up to 30 kg/sq cm). It is shown that the P-V curves are described by empirical formulas. Equations for the calculation of the quantity Δ (being a derivative

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21-55-5-21/28

Water Retention Properties of Kaolin, Bentonite and Faience Masses

of pressure with respect of water amount (V) are derived from these formulas. Given is the dependence of Δ on the values of P, and the kind of the peptizers used. There are 4 graphs, 1 table and 9 Soviet references.

ASSOCIATION: Khar'kovskiy politekhnicheskii institut (Khar'kov Polytechnic Institute)

PRESENTED: By Member of the AS UkrSSR, P.P. Budnikov

SUBMITTED: October 24, 1957

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

1. Clays--Moisture content

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131-58-6-8/14

AUTHORS: ~~Kukolev, G. V.~~, Kivin, D. I., Zelenskaya, A. T., Lur'ye, M. A.,
Minskiy, Ya. M.

TITLE: Water-Tight Magnesite-Dolomite Brick (Vodoustoychivyy magnezito-
dolomitovyy kirpich)

PERIODICAL: Ogneupory, 1958, Nr 6, pp. 270 - 274 (USSR)

ABSTRACT: The investigations carried out by the Institute for Refractory
Products showed that by combining magnesite and dolomite in the
raw mixture for clinkers it is possible to obtain products of
high quality, which was proved in the papers by G. V. Kukolev
and D. I. Kivin (Reference 1). In carrying out the present work
clinkers were produced by means of burning a calculated and
controlled finely ground mixture of dolomite, magnesite, quartzite
and phosphorite. The finely ground mixtures were produced accor-
ding to the wet process. In table 1 some results of the labora-
tory investigations are mentioned. In the VNIIO experimental
works several tons of synthetic water-tight magnesit-dolomite
clinkers were produced and of it burned and unburned bricks were
made. Furthermore the production of the masses is described in

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131.58.C-3/14

Water-Tight Magnesite-Dolomite Brick

detail. The investigation of the samples after burning (tables 2 and 3) showed that the bricks of all masses showed a high density and mechanical strength notwithstanding the relatively low burning temperature. In testing the magnesite-dolomite as well as the usual magnesite bricks in practice the former proved to be of better quality. Thanks to the hydraulic hardening the unburned bricks showed after one day of storing a resistance to pressure of 63-83 kg/cm², after one month 294-340 kh/cm², and after 3 months 530-670 kg/cm², having good properties with all this. Furthermore a scheme for the production of magnesite-dolomite bricks is recommended and described in detail. The possibility and usefulness of vacuum filtering of the slip is proved by the work of G. Z. Dolgina (Reference 2). Unburned big magnesite-dolomite blocks can be produced of burned clinker powders in the villages where they are needed. For the metallurgy in the South, Siberia and other districts the production of bricks can be based on the mixture of dolomite and caustic magnesite with additions. These methods are also to be made use for saving magnesite and chromite ores. The production of unburned fire-proof magnesite-dolomite products is to be organized in the works

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Water-Tight Magnesite-Dolomite Brick

131-58-6-8/14

departments for refractory products in the Ural mountains, on the condition that the ready magnesite-dolomite powder of the "Magnesit" will be supplied. Their production of the same burned and unburned products is to be organized in the Nikitovka dolomite Kombinat of dolomite and caustic magnesite with additions. The staff of editors of the periodical remarks on this in reference 3 that first of all a testing of these products of a great industrially produced amount of such bricks would be necessary. There are 3 tables and 2 references, 2 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov
(All-Union Scientific Research Institute for Refractories)

1. Refractory materials--Production
2. Refractory materials--Analysis
3. Refractory materials--Test results

Card 3/3

AUTHORS:

Fukelov, G. V., Trovstin, L. A., Dolgova, G. Z.

307/151-58-8-1/12

TITLE:

Carbonaceous Refractory Materials with Carbon Binding
(Uglerodistyie ognepory na ugol'noy svyazke)

LITERATURE:

Ognepory, 1958, Nr 8, pp 337-344 (USSR)

ABSTRACT:

The theoretical conditions and the results obtained by experimental research concerning the production of carbonaceous refractories with carbon binding are discussed. This method takes advantage of the fact that, when heated, coal goes over into a plastic state, and it is based upon pressing in a heated state as has already been proved by the authors (Ref 1). The temperature interval of the plastic state is characterized by the thickness of the plastic layer which is determined by the plastometric method (GOST 1186-48). Figure 1 shows the plastometric diagram for fat coal, which possesses the greatest coking capacity as may be seen from figure 2. The range within fat coal softens as well as the possible temperatures for warm pressing are between 350 and 480 - 490°. Table 1 shows the characteristic of the most important initial mate-

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Carbonaceous Refractory Materials With Carbon Binding

rials used in the experiments. The plastometric diagram as well as the curve of the escape of volatile components of the coal of the pit 4/5 at Nikitovka are shown by figures 1 and 3. The authors employed the method of pressing by heating the mass in the mold by means of a current which they made to pass through it. Laboratory tests were carried out in a hollow cylindrical mold made from fireclay brick for purposes of insulation. The electric current used for heating the pressed part was made to pass through the press ram. The experimental press form and the small testing device were designed by the construction engineers A. P. Drobotov and G. F. Pshemyshskiy. The composition of the most suitable masses and the properties of the samples produced in the laboratory are described by table 2. In the test plant of the VNIIO a quantity of bricks was produced. For this purpose a mold was made, which was mounted on to a hydraulic press with 500 t pressure (Fig 4). Further, the production of a quantity of carbon-containing bricks is described. The total length of time needed for the processes of heating, pressing, and burning can be reduced to 20 - 25 minutes. Table 3 shows the properties of these bricks as well as of the car-

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Carbonaceous Refractory Materials With Carbon Binding

bonaceous blocks for the blast furnaces of the Dneprovsk electrode factory. Experiments, which are carried out at a temperature of 1600° during a period of 16 hours showed no traces of a harmful influence exercised by the liquid cast iron upon the carbonaceous refractory materials. An investigation of these test bricks carried out in accordance with OST 8267 proved their high degree of thermal resistivity. For the purpose of further research work to be carried out with this material the establishment of an experimental industrial plant is recommended. There are 4 figures, 3 tables, and 6 references, 6 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov
(All-Union Scientific Research Institute for Refractories)

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SOV/81-59-9-32076

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 9, p 356 (USSR)

AUTHOR: Kukolev, G.V.

TITLE: The Physico-Chemical Conditions of Sintering Refractory Masses

PERIODICAL: Tr. Khar'kovsk. politekhn. in-ta, 1958, Vol 17, pp 191 - 205

ABSTRACT: The most characteristic methods for accelerating the sintering of refractory masses by controlling the properties of the solid phase and the structure and the properties of the liquid phase are considered. It is necessary in this case to attain the most efficient action of the liquid at the least quantity of it. The positive action of the liquid phase on recrystallization and packing of the refractory material is preserved and intensified in the case of obtaining the solid phase in the active state. This is attained by dispersion, formation of solid solutions, and by the utilization of high-speed reactions in the solid phase. Packing during sintering is possible only in the case of redistribution of the liquid and solid phases in the region of the pores. The effect of the capillary forces can be positive as well as negative. The liquid medium which is the most favorable for the recrystallization

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The Physico-Chemical Conditions of Sintering Refractory Masses

and packing of the refractory material is the medium with the highest quantity of monotypic cybotactic regions corresponding to the solid phase (e.g. melts which can be in equilibrium with only one, sintering solid phase). A favorable action show only those cations in the melt, in which the values of the electrostatic interaction with O_2 , referred to the coordination number, lie within a relatively limited range. Other properties of the liquid phase (viscosity, wetting capacity, surface tension) are also determined by the composition and the structure of the melts. The positive effect of these properties on sintering can be paralyzed by an unfavorable structure of the melt.

G. Maslennikova

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30623

SOV/81-59-5-16254

15.2130

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 5, p 362 (USSR)

AUTHORS: Kukolev, G.V., Livson, Z.A., Piven', I.Ya.

TITLE: The Effect of the Enamel Composition on the Mechanical Resistance of Porcelain Insulators

PERIODICAL: Tr. Khar'kovsk. politekhn. in-ta, 1958, Vol 18, pp 207 - 210

ABSTRACT: The possibility of increasing the mechanical resistance of insulators was investigated at the Slavyansk Insulator Plant im. Artem by changing the composition of brown enamel with the molar formula: 0.0156 MnO, 0.0733 CaO, 0.0635 Al₂O₃, 0.0436 MgO, 0.0073 Fe₂O₃, 4.7131 SiO₂, 0.0213 Cr₂O₃, 0.0167 R₂O, 0.0072 Na₂O. The following oxides were introduced over the 100% composition of the enamel: MgO, BaO, ZrO₂ and TiO₂. The burning of the insulators was carried out in the tunnel furnace at the plant at 1,320°C. The tensile strength limits were determined on a hydraulic press. The results of the tests show that oxides vary in their effect on the mechanical resistance of the insulator. For example, ZrO₂ in all cases increases the

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The Effect of the Enamel Composition on the Mechanical Resistance of
Porcelain Insulators

mechanical resistance of the samples. BaO and MgO do not have an appreciable effect on increasing the mechanical resistance. TiO_2 shows some increase in the mechanical resistance but the pouring of the enamel in this case becomes worse. *UH*

S. Tumanov

Card 2/2

KUKOLEV, G.V.; KIVIN, D.I.; ZELENSKAYA, A.T.; LUR'YE, M.A.; MINSKIY, Ya.M.

Waterproof properties of magnesite-dolomite bricks, Ogneupory 23
no.6:270-274 '58. (MIRA 11:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov.
(Firebrick)

15(2)

AUTHORS: Kukolev, G. V., Mikhaylova, K. A. SOV/131-59-1-7/12

TITLE: Influence of Some Additions on the Sintering of Highly Aluminiferous Substances (Vliyaniye nekotorykh dobavok na spekaniye vysokoglinozemistykh mass)

PERIODICAL: Ogneupory, 1959, Nr 1, pp 39 - 44 (USSR)

ABSTRACT: Pevzner, Berezhnoy, Frenkel', Poluboyarinov recommended various additions. The authors of this article examined the influence of various additions and their combinations with P_2O_5 , A. P. Kochetova taking part in the experiments (Ref 1). The chemical composition of raw materials, the refractoriness and the results of the sedimentary-metric analysis are indicated in tables 1 and 2. Petrographical investigations were carried out by L. I. Karyakin. The authors used Na_2O , CuO , TiO_2 , MnO , SrO , CaO , MgO and their combinations with P_2O_5 in the quality of additions, the total quantity of additions in all cases amounting to 1% of the weight of the mixture of technical alumina with clay. The specific weights of the samples burnt

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Influence of Some Additions on the Sintering of Highly SOV/131-59-1-7/12
Aluminiferous Substances

at 1500° are shown in figures 1 and 2. Table 3 indicates the true and apparent porosity of these proofs, and with an addition of P₂O₅. On the strength of the investigations, fireproof clay of two compositions 65/35 and 80/20 with an addition of MgO was produced, the density of which is shown in table 4. Tables 5 and 6 show the characteristics of the samples burnt at 1500°. It follows that the density of the burnt firebrick products 80/20 and 65/35 at a low burning temperature and without additions is greater than that of fireproof clay at high burning temperatures. The introduction of sintering addition into the substance reduces porosity and increases the mechanical resistance of the samples. For the greater part, the temperatures of deformation under stress have even increased for these products. Refractoriness of the test samples decreased by 10° only. Creeping remained unchanged. An addition of magnesium oxide makes it possible to reduce the burning temperature of a high aluminiferous fire clay for obtaining mullite and mullite-corundum products of high quality. There are 2 figures, 6 tables, and 14 refer-

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Influence of Some Additions on the Sintering of Highly SOV/131-59-1-7/12
Aluminiferous Substances

ences, 13 of which are Soviet.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov
(Ukrainian Scientific Research Institute for Refractories)

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AUTHORS: Kukolev, G.V. and Shcheglov, S.I. SOV/80-59-1-6/44

TITLE: On the Role of the Liquid Phase in Sintering Forsterite Refractory Materials (O roli zhidkoy fazy v spekanii forsteritovykh ogneuporov)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Nr 1, pp 40-45 (USSR)

ABSTRACT: The authors investigated the sintering process of forsterite refractory materials in connection with the data on phase equilibria. The following systems were investigated: MgO-SiO₂; MgO-Al₂O₃-SiO₂; 2MgO.SiO₂-SiO₂-CaO.Al₂O₃.2SiO₂ and Na₂O-MgO-SiO₂. The degree of sintering was determined by the change in volumetric weight, apparent and true porosity, and the ultimate strength of the samples under compression. The viscosity of the smelt and the surface tension were determined by the method developed by Yermolayeva in the All-Union Scientific Research Institute of Refractory Materials in Khar'kov. The effect of several additions was investigated at various temperatures. It turned out that additions of V₂O₅, B₂O₃, P₂O₅ and Li₂O improved the sintering in the MgO-SiO₂ systems. In other systems the effect of additions was less pronounced. Additions which improve sintering lower the viscosity and surface tension of the smelt.

There are 5 graphs, 1 diagram, 1 table and 22 Soviet references.

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SOV/80-59-1-G/44

On the Role of the Liquid Phase in Sintering Forsterite Refractory Materials

ASSOCIATION: Khar'kovskiy politekhnicheskii institut imeni V.I. Lenina
(Khar'kov Polytechnic Institute imeni V.I. Lenin)

SUBMITTED: May 20, 1957

Card 2/2

5(1,2)

AUTHORS:

Kukolev, G. V., Pitak, N. V.

SOV/153-2-2-19/31

TITLE:

Change of the Structural and Mechanical Properties of the Bentonite Suspension in Its Dependence Upon Kind and Quantity of Peptizers (Izmeneniye strukturalno-mekhanicheskikh svoystv bentonitovoy suspensii v zavisimosti od roda i kolichestv peptizatorov)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 2, pp 244 - 246 (USSR)

ABSTRACT:

The questions of the influence of various electrolytes and surface-active substances on the suspension mentioned in the title (Refs 1-3) have not been investigated sufficiently. Some electrolytes cause the development of coagulation structures (Ref 4). Alkaline electrolytes accelerate and harden the thixotropic structures of the bentonite suspension (Ref 5). NaOH liquefies such a suspension, but only in the absence of CO₂ of the air.

Pyzhevskiy bentonite was examined (Khmel'nik area UkrSSR). According to Ovcharenko (Ref 7), the compound water here amounts to 20% and the specific surface to 736 m²/g. A rotary viscosimeter of the type RV - 8 (Ref 8) served for its determination at room

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Change of the Structural and Mechanical Properties of the SOV/153-2-2-19/31
Bentonite Suspension in Its Dependence Upon Kind and Quantity of Peptizers

temperature. Peptizers were: soda, caustic soda, soda extracts of peat and straw, water glass, peat extract with water glass, vinasse of sulfite spirit and tannin. The concentration of solid substances in the system amounted to 33%. The suspension was left standing for 8-10 hours. The structure developed in that time (Ref 9), was carefully destroyed by shaking. Figure 1 and 2 show the results of the definition. From them one can see that the peptizers change the viscosity and the threshold shear stress of the bentonite suspension in a much larger field of sizes, with the same moisture content. According to their effect, peptizers may be divided into 3 groups:

1. those which reduce the solidity of the structure - liquefier;
2. those which increase this solidity;
3. surface-active admixtures which take an intermediate position between 1. and 2. and which have little influence on the indices of the structural mechanical properties. 1. includes: water glass and water glass extract of peat. The bentonite in suspension, together with these admixtures, is peptized under the influence of alkali developed due to the hydrolysis of the alkaline electrolyte. Thus the penetration of water into the interior of the structure is favored.

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Change of the Structural and Mechanical Properties of the SOV/153-2-2-19/31
Bentonite Suspension in Its Dependence Upon Kind and Quantity of Peptizers

Colloidal silicic acid however envelops the bentonite particles or their aggregates with a protective film of sufficient strength. In this way the penetration of water mentioned before is prevented. Thus conditions are created under which the liquefying influence of the alkaline cations and OH ions on the bentonite suspension is made effective. That is how a considerable reduction of viscosity and of the threshold shear stress develops. 2. Peptizers of this group: soda, caustic soda, soda extracts of peat and straw increase the dispersion of the bentonite pools most. Thus the mechanical properties of the suspension are increased (curves 1-4, figures 1 and 2). Na^+ and OH^- ions liquefy the suspension only in the absence of CO_2 (Ref 6). 3. Among them there are the surface-active organic substances: sulfite spirit, vinasse and tannin. The curves 5 and 6 show a weak effect on the reduction of the structural and mechanical properties. There are 2 figures and 10 references, 9 of which are Soviet.

ASSOCIATION:

Card 3/4

Khar'kovskiy politekhnicheskiy institut imeni V. I. Lenina; Kafedra keramiki, stekla, ogneporov i emalirovaniya (Khar'kov Polytechnic Institute imeni V. I. Lenin, Chair of Ceramics, Glass, Refractories,

Change of the Structural and Mechanical Properties of the SOV/153-2-2-19/31
Bentonite Suspension in Its Dependence Upon Kind and Quantity of Peptizers

and Enamelling)

SUBMITTED: March 5, 1958

Card 4/4

18(7)

SOV/128-59-3-21/31

AUTHOR: Kukolev, G.N., Doctor of Technical Sciences, Tarasenko,
V.N., Candidate of Technical Sciences

TITLE: Heat-Proof Enamel Coating Withstanding Liquid Aluminum.

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 3, pp 45-46 (USSR)

ABSTRACT: Usually for melting and pouring of aluminum and other non-ferrous metals crucibles made of sheet metal covered with some refractory material are used. Tests already disclosed by the authors in an article published by the Khar'kov Polytechnical Institute in 1956 offer the possibility to use as a heat-proof coating enamel Nbr. 2/2 according to the catalogue of the branch office of NIIKHIMMASH in Khar'kov. There follows a description of the tests together with the list of the percentage of enamel coating together with the pertaining recipes. Given as percent values the coating contains: 63,32 SiO₂; 2,81 Al₂O₃; 4,75 CaO; 16,11 Na₂O; 1,7 B₂O₃; 4,27 TiO₂; 4,19 K₂O; 2,0 CaF₂; 0,42

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SOV/128-59-3-21/31

Heat-Proof Enamel Coating Withstanding Liquid Aluminum

Cr_2O_2 ; 0,32 CaO; 0,11 NiO. The tests have been carried out by constantly heating the enamel coated parts to temperature of 750° Celsius during 50 hours. There are 2 tables

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15(2)

SOV/72-59-5-8/23

AUTHORS: Kukolev, G. V., Professor, Doctor of Technical Sciences,
Pitak, N. V.

TITLE: Utilization of Bentonite in the Production of Faience Products
(Ispol'zovaniye bentonita dlya proizvodstva fayansovykh izdeliy)

PERIODICAL: Steklo i keramika, 1959, Nr 5, pp 22 - 26 (USER)

ABSTRACT: The addition of bentonite improves the plasticity of the pastes and increases the solidity and water stability of the semifinished products in the air-dry state, whereby a transition to a single burning of the products is rendered possible. Moreover, bentonites as melt can reduce the burning temperature of porcelain products, as may be seen from papers published by G. P. Filintsev, M. A. Bezborodov, S. G. Tumanov, and V. P. Shvayko (Ref 1). In the field of the use of bentonite in faience pastes there exist only a few papers by M. A. Bezborodov, Ye. F. Poluektova, Z. A. Nosova, L. F. Shuliko, and I. Ya. Piven' (Ref 2). It may be seen therefrom that bentonites can be used for the production of faience tiles and slabs. The authors of this article made experiments in this field. The chemical composition of the raw materials used herein is shown in table 1. The viscosity of clay was determined by means of the viscosimeter RV-8. Figures 1,2,

Card 1/2

Utilization of Bentonite in the Production of Faience Products SOV/72-59-5-8/23

and 3 show the effect of the type and the quantity of additions on viscosity. Table 2 shows the compositions and essential properties of the clays and products. In connection with the performance of these experiments the authors of this article refer to papers published by G. V. Kukolev, Ya. M. Syrkin (Ref 3), P. A. Kryukov, and N. A. Komarov (Ref 4). Figure 4 shows the dependence of the ability to retain water on pressure and figure 5 the volumetric changes of the samples in drying at 110°. The filterability of the clays was determined by means of a vacuum filter which is described in papers published by Ya. M. Syrkin, L. N. Bernshteyn, and K. M. Kiseleva (Ref 5). The best filterability of clay occurs with an increased kaolin content and a bentonite addition as may be seen from table 3. Conclusions: Products of this clay show less shrinkage after drying and burning than products of slime with a content of chasov-yarskiy clay and exhibit a considerable whiteness. The water absorption of the products can be reduced to 9-12% by the addition of 5% feldspar to the clay. There are 5 figures, 3 tables and 5 Soviet references.

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15(2))

AUTHORS:

Kukolev, G. V., Professor, Doctor of Technical Sciences, PITAK, N. V.

TITLE:

The Influence of Peptizers on the Efficiency of a Plodder in Manufacturing Faience Materials and Kaolin-bentonite-suspensions (Vliyaniye peptizatorov na proizvoditel'nost' lentochnogo pressa pri pererabotke fayansovykh mass i kaolino-bentonitovykh suspenziy)

PERIODICAL:

Steklo i keramika, 1959, Nr 7, pp 7 - 11 (USSR)

ABSTRACT:

As it results from the investigations of L. A. Abduragimova, P. A. Rebinder, N. N. Serb-Serbina and I. A. Uskov (Footnote 2) the bentonite-clay types are very sensitive to the effect of electrolytes. The authors of this paper investigate the influence of the peptizers on the kaolin-bentonite-suspensions and faience materials in their processing by means of a plodder. The chemical composition of the clayey materials which were used for these studies is given in table 1. The absorption capacity, the specific surface and the amount of the bound water are taken from the studies of F. D. Ovoharenko (Footnote 3). The compositions of the faience materials are given in table 2. As peptizers soda and soda extracts from peat and straw were used which were found in former studies. The investigations were carried through on a laboratory

Card 1/2

The Influence of Peptizers on the Efficiency of a Plodder in SOV/72-59-7-3/19
Manufacturing Faience Materials and Kaolin-bentonite-suspensions

plodder the current consumption being measured by means of a self-recording wattmeter of the system D-333. The test results are represented in figure 1 till 5 and subsequently explained. The influence of the peptisation on the processing conditions is evident both from the former investigations of the authors of this paper and F. D. Ovcharenko (Footnote 4) and from the investigations of G. V. Kukolev and Ya. M. Syrkin (Footnote 5). The maximum output of the plodder is attained by constant number of revolutions of the worm shaft at the optimum suspension viscosity. The test results agree with the former studies of the authors of this paper and G. V. Kukolev and A. N. Korol' (Footnotes 6 and 7). Conclusions. Bentonite additions to kaolin suspensions and faience materials increase the output of plodders considerably and lower the current consumption. An even greater effect is caused by the addition of some peptizers. There are 5 figures, 2 tables, and 11 references, 9 of which are Soviet.

Card 2/2

KUKOLEV, G.V.; MIKHAYLOVA, K.A.

Effect of certain admixtures on the sintering of high-alumina
batch materials. Ogneupory 24 no.1:39-44 '59. (MIRA 12:1)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Firebrick) (Magnesia)

KUKOLEV, G.V.; SHCHUKAREVA, L.A.

Studying properties of hydrated kaoline films in relation to pressure. Trudy KhPI 31 no.1:5-9 '59. (MIRA 13:10)
(Kaolin--Testing)

S/137/60/000/010/003/040
A005/A001

Translation from: Referativnyy zhurnal, Metallurgiya, 1960, No. 10, p. 8, # 22432

AUTHORS: Kukolev, G.V., Shecheglov, S.I.

TITLE: The Effect of Melt Properties on the Sintering of Forsterite in Various Systems

PERIODICAL: Tr. Khar'kovsk. politekhn. in-ta, 1959, Vol. 31, No. 1, pp. 25-35

TEXT: The authors carried out an experimental investigation of the viscosity and surface tension of melts, which arise during roasting of the work pieces and may be in an equilibrium with forsterite, depending on the content in the melt of Al_2O_3 , CaO , SO_2 , MgO , Na_2O and of admixtures of V_2O_5 , P_2O_5 , B_2O_3 and ZrO_2 . With an increased content in the melt of Al_2O_3 and CaO , viscosity decreases and the sintering capacity is raised. All admixtures reduce viscosity. The sintering capacity of forsterite increases sharply when the admixture is simultaneously reducing both viscosity and surface tension. There are 11 references. ✓
N.M.

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

XUKOLEV, G.B.; LIVSON, Z.A.; BELIK, Ya.G.; PIVEN', I.Ya.

Changes in porcelain insulators after long use on high-voltage
lines. Trudy KhPI 31 no.1:71-78 '59. (MIRA 13:10)
(Electric insulators and insulation)

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20504

S/081/61/000/001/005/017
A005/A105

15.2140

Translation from: Referativnyy zhurnal, Khimiya, 1961, No. 1, p. 292, # 11152

AUTHORS: Kukolev, G.V., Tarasenko, V.N.

TITLE: The Effect of a Heatproof Cover on the Metal Oxidation at High Temperatures

PERIODICAL: "Tr.Khar'kovsk.politekhn.in-ta", 1959, Vol.31, No.1, pp. 135-138

TEXT: The authors studied the oxidation process of a metal under a coating of heatproof enamel at 870°C. The heatproof enamel coatings are efficiently applied to ordinary steels, in some cases also to highalloys. The protection from excessive and rapid metal oxidation, as during the calcining process at the coating as under exploitation conditions, is chiefly required of the heatproof coats. One obtained heatproof compositions by the addition of different heatproof materials to enamels of common compositions (2/2) or to low-melting eutectics. It is established that coatings are most effective that contain alumina and diaspore, and, in particular, these materials in connection with chromite. N. Popova

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

KUKOLEV, G.V.; SHCHEGLOV, S.I.

Role of the liquid phase in sintering forsterite refractories.
Zhur.prikl.khim. 32 no.1:40-45 Ja '59. (MIRA 12:4)

1. Khar'kovskiy politekhnicheskii institut imeni V.I.Lenina.
(Forsterite) (Sintering)

BUDNIKOV, Petr Petrovich, akademik, zasluzhennyy deyatel' nauki i tekhniki, trizhdy laureat Stalinskoy premii; KUKOLEV, G.V., prof., doktor tekhn.nauk, otv.red.; BEREZHNOY, A.S., red.; AVGUSTINIK, A.I., prof., red.; BUTT, Yu.M., prof., red.; MCHEDLOV-PIETROSYAN, O.P., prof., red.; GINSTLING, A.M., prof., red.; SMELYANSKIY, I.S., prof., red.; ZNACHKO-YAVORSKIY, I.L., kand.tekhn.nauk, red.; ZHIKHA-REVICH, S.A., kand.tekhn.nauk, red.; KRECH, E.I., kand.tekhn.nauk, red.; MATVEYEV, M.A., kand.tekhn.nauk, red.; ROYAK, S.M., kand.tekhn.nauk, red.; NEMCHENKO, Ye.M., red.izd-va; MARCHUK, G.T., red.izd-va; KADASHEVICH, O.A., tekhn.red.

[Selected works] Izbrannye trudy. Kiev, Izd-vo Akad.nauk USSR, 1960. 571 p. (MIRA 13:7)

1. AN USSR; chlen-korrespondent AN SSSR (for Budnikov). 2. Chlen-korrespondent AN USSR (for Berezhnoy).
(Silicates) (Ceramic materials) (Refractory materials)
(Binding materials)

S/131/60/000/05/09/016
B015/E011

AUTHORS: Kukolev, G. V., Mikhaylova, K. A.

TITLE: The Influence of Surface-active Substances on the Press-
ability and Elastic Aftereffect of Refractory Masses

PERIODICAL: Ogneupory, 1960, No. 5, pp. 222-226

TEXT: In the article under review, the authors investigate the effect of surface-active additions on the compression of refractories when submitting these to half-dry pressing. Also the causes and the effect of elastic aftereffect upon the density of the samples after pressing are studied. The surface-active substances used were fatty acid (C_7-C_9), "nylonaft", petroleum, crude benzene, sulfite-alcohol slops, and a combination of the acid C_7-C_9 with petroleum. These additions decreased hardness and thus sped up the grinding of various refractories. The introduction of surface-active additions, especially of acid (C_7-C_9) in kaolin masses with a high fire-clay content had a favorable influence upon the compression of the samples after

Card 1/3

The Influence of Surface-active Substances on the Pressability and Elastic Aftereffect of Refractory Masses

S/131/60/000/05/09/016
BU15/B011

pressing and burning (Table 1). As may be seen from table 1, there occurs a considerable reduction in the porosity of burned samples from masses rendered hydrophobe, an increase in their weight by volume and mechanical strength. Fig. 1 shows the dependence of the weight by volume of the samples on the number of pressings. The introduction of surface-active additions in highly aluminous sillimanite samples is shown in table 2. The pressing and measuring of the height of the samples were conducted by means of the device and the method by P. S. Mamykin and A. F. Ogarkov. Investigations of the elastic aftereffect showed its direct connection with the hydrophobe character and with the final density of the samples. Next, a number of possible causes underlying the decrease of elastic aftereffect of the masses under the influence of surface-active additions are specified and explained. Grain sizes of fractions below 0.02 mm were determined using Figurovskiy's method. Fig. 2 shows the dependence of the aftereffect of hydrophobe and non-hydrophobe masses on humidity. Fig. 3 shows a water drop between polished fire-clay plates. The authors state in conclusion that by introducing surface-active additions into the refractory masses, brick clays and burned products can be

Card 2/3

The Influence of Surface-active Substances on the
Pressability and Elastic Aftereffect of
Refractory Masses

S/131/60/000/05/09/016
B015/B011

better condensed at the expense of the elastic aftereffect on pressing.
There are 3 figures, 2 tables, and 8 Soviet references.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneporov
(Ukrainian Scientific Research Institute of Refractories)

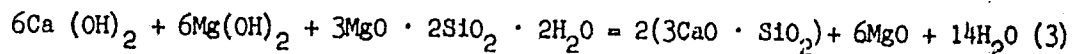
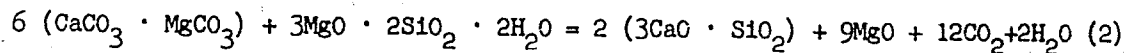
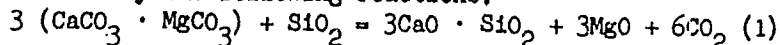
Card 3/3

82318
S/063/60/005/002/001/006
A003/A001

15.2000

AUTHOR: Kukolev, G. V., ProfessorTITLE: Physico-Chemical Fundamentals of Sintering in the Technology of Refractories and Ceramic MaterialsPERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva im. D. I. Mendeleeva, 1960, Vol. 5, No. 2, pp. 134-140

TEXT: Sintering of refractory and ceramic materials is the most important stage of the technological process. The theory of the role played by the liquid phase and the solid substance in the formation of refractory materials was first developed by A. A. Baykov (Ref. 1). The presence of a highly-dispersed solid phase accelerates sintering. The sintering capacity of waterproof dolomite clinkers is affected by the following reactions:



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82318
S/063/60/005/002/001/006
A003/A001

Physico-Chemical Fundamentals of Sintering in the Technology of Refractories and Ceramic Materials

Mixture (1) after heating to $1,650^{\circ}\text{C}$ had the volumetric weight of $2.26-2.33 \text{ g/cm}^3$; mixture (2) after heating to $1,450^{\circ}\text{C}$ $2.8-2.9 \text{ g/cm}^3$ and mixture (3) at $1,400^{\circ}\text{C}$ 3.08 g/cm^3 . The sintering capacity of pure aluminum oxide depends on the type of its initial compound subjected to preliminary dissociation at low temperature (Ref. 6). After burning at $1,600^{\circ}\text{C}$ the porosity of magnesium oxide increases in the following series of the initial compounds: magnesium hydroxide < basic hydrocarbonate < oxide from magnesium metal < magnesium chloride. The sintering of periclase is accelerated by the appearance of solid interstitial solutions of MgFe_2O_4 , MnO , Mg_2TiO_4 , and in a lesser degree substitution solutions of FeO , NiO and MnO . The sintering of pure alumina is especially accelerated by 1-2% TiO_2 . The sintering of Al_2O_3 is accelerated by oxides (TiO_2 , MnO_2 and Fe_2O_3) which yield solid substitution solutions in corundum (Ref. 6). The effect of additions on sintering of MgO , CaO and Al_2O_3 was established (Ref. 28). The best results were obtained with additions, the cations of which form with the cations of the sintered oxides diagonal rows in the periodic system. This corresponds, according to A. Ye. Fersman, to the appearance of heterovalent isomorphous mixtures. The dispersion of the sintering material can considerably accelerate the sintering

Card 2/5

8231B

S/063/60/C05/002/001/006
A003/A001

Physico-Chemical Fundamentals of Sintering in the Technology of Refractories and Ceramic Materials

process (Refs. 6, 31-35). The introduction of 2.5% $MgCl_2$ reduces the temperature of complete sintering of kaolin from 1,520 to 1,320°C. The application of an active combined peptizator, e. g., 0.1% Na_2O in the form of soda and 0.25% sulfite-alcohol slops, to the dispersion of kaolin increases sharply the sintering effect of small (0.5%) amounts of MgO . The flowing of the substance in solid phase sintering can proceed by two mechanisms: 1) by surface or bulk diffusion, and 2) by viscous or plastic flow. The difference in the solubility of non-equilibrium intermediate and small crystals of the equilibrium phases on the one hand, and the solubility of the larger crystals, on the other, is very important in liquid phase sintering. In the sintering of kaolinite and quartz in porcelain (Ref. 74) drops of the melt glue the crystalline grains. With an increase in the temperature the crystals decrease their sizes, are dissolved in the melt and their viscosity drops. Ya. I. Frenkel' developed the theory of short-range order in liquids (Ref. 53). Silicate melts are dissociated electrolytes and are characterized by a microheterogeneous structure, the short-range order of which is determined by the interaction energy of cations of different type with oxygen anions (Refs. 58-62). The structure of the molten silicates determines their properties (Refs. 63-64). W

Card 3/5

82318

A/063/60/005/002/001/006
A003/A001

Physico-Chemical Fundamentals of Sintering in the Technology of Refractories and Ceramic Materials

An increase in the size of silicon-oxygen complexes decreases the surface tension of the melt. Al_2O_3 increases and SiO_2 decreases the surface tension. The recrystallization of solid substances through the melt is the most important factor in liquid sintering (Refs. 48, 50). It was shown in the sintering of $\alpha-Al_2O_3$ (Ref. 71) and in the sintering of forsterite (Ref. 72) that sintering takes place more actively, if the representing point of the equilibrium solid phase lies within the field of primary crystallization of the sintering solid phase and not on the boundary curves of the field. In the systems consisting of MgO , SiO_2 and a third component, the best sintering of forsterite takes place in the case of increased viscosity and decreased surface tension on the boundary melt-air, and also at decreased viscosity and increased surface tension (Refs. 72-73). In the sintering of one-component oxides only those additions have a favorable effect, in which the ratio $\frac{E}{e^2}$ (E is the electrostatic bond energy, e is the charge of the electron) has the following values: for $\alpha-Al_2O_3$ 0.49-0.72 (TiO_2 , Mn_2O_3), for MgO 0.34-0.72 (Fe_2O_3 , Al_2O_3 , BeO , ZrO_2 , ZnO , NiO , TiO_2 , Cr_2O_3), for CaO 0.49-1.05 (MnO_3 , B_2O_3 , Al_2O_3 , Fe_2O_3 , TiO_2 , BeO , Cr_2O_3 , ZnO , Mn_2O_3).

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02,13

S/063/60/005/002/001/006
A003/A001

Physico-Chemical Fundamentals of Sintering in the Technology of Refractories and Ceramic Materials

In the sintering of the two-component compound $2\text{MgO} \cdot \text{SiO}_2$ the values are 0.13-0.25 (Na_2O , Li_2O) and 0.98-1.05 (P_2O_5 , V_2O_5 , W_3 and B_2O_3). In corundum masses the best effect is obtained by MgO (Ref. 86). ⁴Lithium materials, the application of which is reviewed by P. P. Budnikov and A. M. Cherepanov (Ref. 88), when introduced into porcelain masses reduce the burning temperature by 150°C (Refs. 89-91). There are 96 references: 70 Soviet, 13 American, 8 English and 5 German.

Card 5/5

Kukolev, G. V.

S/131/60/000/008/001/003
B021/B058

AUTHORS: Kukolev, G. V., Strelets, V. M., Pitak, N. V.,
Amerikova, T. A.

TITLE: Compound Pouring Ladle Nozzle Lining for the Casting of
Rimmed Steel in Installations for Continuous Steel Casting

PERIODICAL: Ogneupory, 1960, No. 8, pp. 352-356

TEXT: It was the authors' task to elaborate a ladle nozzle lining, which undergoes only slight wash-out, is not clogged by metal, and warrants a satisfactory jet without spattering or eddies. Highly aluminous zirconium- and magnesite inserts for the compound pouring ladle nozzle lining were produced at the Opytnyy zavod (Experimental Plant) of the UNIIO (Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov - Ukrainian Scientific Research Institute of Refractories). The pouring ladle nozzle linings were produced at the Chasov Yarskiy kombinat ogneupornykh izdeliy (Chasov Yar Kombinat of Refractories), the working processes having been previously elaborated at the Experimental Plant of the Ukrainian Scientific Research Institute of Refractories. Technical alumina of type П 1 (G1) and Chasov

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Compound Pouring Ladle Nozzle Lining for the
Casting of Rimmed Steel in Installations for
Continuous Steel Casting

S/131/60/000/008/001/003
B021/B058

Yar clay 41 (Ch1) were used for the production of highly aluminous inserts.¹⁵ Zirconium inserts were produced from finely ground zirconium with a ZrO_2 content of 69%. Chamotte pouring ladle nozzle linings were produced at the Experimental Plant of the Ukrainian Scientific Research Institute of Refractories from a mass containing 40% chamotte from Chasov Yar clay 41 (Ch1), 40% Chasov Yar clay 41 (Ch1) and 20% foundry coke. The highly aluminous and magnesite inserts, as well as chamotte pouring ladle nozzle linings were pressed in the "Tagilets" friction press. A press mold (Fig. 1) was used at the Chasov Yar Kombinat. A total view of the two parts of the compound pouring ladle nozzle lining is shown in Fig. 2. The inserts and linings were fired in periodic furnaces. The firing curves are shown in Fig. 3 and the properties of the fired products are tabulated. The compound linings were tested at the Stalinskiy metallurgicheskiy zavod (Stalino Metallurgical Plant) and the zavod "Krasnoye Sormovo" ("Krasnoye Sormovo" Plant) during the casting of rimmed steel. The experiments were conducted by collaborators of the Ukrainian Scientific Research Institute of Refractories, the Ukrniimetallov (Ukrainskiy nauchno-issledovatel'skiy

Card 2/4

Compound Pouring Ladle Nozzle Lining for the
Casting of Rimmed Steel in Installations for
Continuous Steel Casting

S/131/60/000/008/001/003
B021/B058

institut metallov - Ukrainian Scientific Research Institute of Metals),
the TsNIIChM (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy
metallurgii - Central Scientific Research Institute of Ferrous Metallurgy),
the Stalino Metallurgical Plant and the "Krasnoye Sormovo" Plant. Fig. 4
shows highly aluminous inserts after their use in 50 t pouring ladles.
They were tested at the "Krasnoye Sormovo" Plant with apertures of 30 mm
diameter. The aperture of the insert was washed out by 1-2 mm in diameter
when casting rimmed steel of type 3кп (3kp). The wear amounts to 4-6 mm
when casting weld steel of type СВ 08А (Sv08A), which is explained by its
higher content of iron oxides. The authors state in conclusion that the
production technology of compound nozzle linings was elaborated for con-
tinuous rimmed-steel casting. The compound lining consists of a porous
chamotte pouring ladle nozzle as a carrying part, and a highly aluminous
magnesite- or zirconium insert as working part. The highly aluminous
inserts showed the best wear resistance during tests. There are 4 figures,
1 table, and 5 references: 1 Soviet, 2 British, and 2 US.

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Compound Pouring Ladle Nozzle Lining for the
Casting of Rimmed Steel in Installations for
Continuous Steel Casting

S/131/60/000/008/001/003
B021/B058

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneporov
(Ukrainian Scientific Research Institute of Refractories) ✓

Card 4/4

S/131/60/000/009/006/008/XX
B021/B052

AUTHORS: Kukolev, G. V. and Mikhaylova, K. A.

TITLE: Intensification of Sintering, and Properties of Kaolin Fire-clay Products

PERIODICAL: Ogneupory, 1960, No. 9, pp. 422 - 428

TEXT: Results are given on the reduction of the sintering temperature of fireclay and on the examination of the properties of its products. The work conducted here concentrated on sintering in the solid and liquid phases. The authors also examined the effect of various admixtures on the sintering of kaolin, and the common effect of peptizers and mineralizers. A. P. Kochetova participated in this study. Refractoriness and chemical composition of the raw materials, its granulation, and the water absorption of the sintered samples were determined. Thermal and petrographic analyses were conducted by L. I. Karyakin. Na, K, Mg, Ca, Cu, Al, Fe, Ti were added in the form of oxides and carbonates. Kaolin samples with various admixtures were sintered at 1350°C for two hours and then tested. Sintering

✓

Card 1/2

Intensification of Sintering, and Properties of Kaolin Fireclay Products S/131/60/000/009/006/008/XX
B021/B052

was improved by all admixtures except for Al_2O_3 . With 0.5 - 0.75% of MgO, the volume weight increased from 2.26 to 2.40-2.43 g/cm³. Combined admixtures of 0.5% metal oxide + P_2O_5 had the same effect. In summing up it is stated that single (MgO, MnO_2) and combined admixtures were found which have a favorable effect on the sintering of kaolins. It is expedient to add magnesium oxide when producing of compact fireclays of raw materials containing kaolin. Admixtures together with peptizers intensify the sintering effect. Highly refractory kaolin products can be obtained by such additions to the fireclay. This, however, remains to be tested under commercial conditions. There are 1 figure, 9 tables, and 34 references: 33 Soviet and 1 British.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov
(Ukrainian Scientific Research Institute of Refractory
Materials)

Card 2/2

KUKOLEV, G.V.; MIKHAYLOVA, K.A.

Effect of surface-active substances on the compressibility and elastic after-effect of certain refractory masses. Ogneupory 25 no.5:222-226 1960. (MIRA 14:5)

1. Ukrain'skiy nauchno-issledovatel'skiy institut ogneuporov.
(Refractory materials) (Surface active agents)

KUKOLOV, G.V.; STRELETS, V.M.; PITAK, N.V.; AMERIKOVA, T.A.

Sectional nozzles for the continuous pouring boiling steel. Ogneupory
25 no.8:352-356 '60. (MIRA 13:9)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Steel--Metallurgy)

KUKOLEV, G.V.; MIKHAYLOVA, K.A.; Priznala uchastiye Kochetova, A.P.

Intensification of clinkering and properties of
kaolin-chamotte products. Ogneupory 25 no.9:422-428
'60. (MIRA 13:8)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Kaolin) (Clinker brick)

KUKOLEV, G.V.; ZHIKHAREVICH, S.A.

Ladle brick, service conditions, characteristics, and selection of
an efficient technology. Ogneupory 25 no.11:491-496 '60.
(MIRA 13:12)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneporov.
(Firebrick)

15-2670

21.2100

27336

S/021/61/000/002/013/013

D210/D303

AUTHORS: Kukolyev, M. V., and Karaulov, A.H.

TITLE: Colloidal and chemical properties of stabilized ZrO_2 aqueous suspensions and their relations to the technological properties of these suspensions

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 2, 1961, 215 - 218

TEXT: In this experimental investigation the effect of temperature and that of electric potential Zeta on casting properties ZrO_2 are studied. The chemical composition of ZrO_2 was as follows: ZrO_2 - 98.04, SiO_2 - 0.58, Al_2O_3 - 0.37, Fe_2O_3 - 0.19, CaO - 0.3, R_2O - 0.36 %. ZrO_2 was ground with addition of Bilgorod chalk in the amount corresponding to 6 % CaO , to a powder with particle-size smaller than 0.088 mm. The mixture was pressed into samples under
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Colloidal and chemical properties ...

500 kg/cm² pressure which were fired at 1750°C for 17 hours. After heating the product contained 90 - 92 % of cubic ZrO₂. Samples

were reground to particle size < 2 m. Iron was eliminated with hot HCl and water. In the investigated suspensions the water content was 20, 30 and 40 %, the pH of acidic suspensions was obtained by adding HCl, that of alkaline ones with NaOH. The suspensions viscosity was affected by adding acid or alkali, reaching a minimum value at some definite pH values interval. The length of this pH interval increased with the rise of suspension humidity (from 1 - 2 for water content of 20 % to 0.7 - 3.5 for 40 % water content). The viscosity in the alkaline medium was much higher than in the acid. Only with a much lower solid phase concentration did the viscosity in alkaline medium approach that of the acid. The Zeta-potential was determined by electrophoresis, it has been found that it reached a maximum in suspensions of lowest viscosity. The dependence of Zeta-potential and viscosity variations on pH values is shown. The rate of casting was lowest in the interval of maxi-

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S/021/61/000/002/013/013

D210/D303

Colloidal and chemical properties ...

mal liquefaction, but in that case casts of greatest density were obtained, density from acidic suspensions being much higher than that from alkaline ones (3.42 g/cm³ and 2.74 g/cm³ respectively). The casts density affected the casts contraction during firing: 16 % and 21-22 % respectively. The lower density of alkaline casts may be explained by the formation of thicker salivation films around particles, due to a higher hydrophilicity of their surfaces with absorbed Na⁺ ions. During water elimination in gypsum moulds the coagulation forces cause the formation of a loose coagulation carcass with large water content from torn salivation films. By the action of vacuum on the suspension a higher casts density was obtained (+ 0.02 g/cm²) and the quantity of air bubbles was smaller. The heating of suspensions before casting led to their lower viscosity, favorably affected the rate of formation and the casts density; the optimal preheating temperature being 30 - 40°C. The results show that the best results were obtained with preheating at 30°C (30 mm pressure), the casts density being 3.54 g/cm³ and contraction after firing 14.2 %. In order to verify previously pub-

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Colloidal and chemical properties ...

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D210/D303

lished statements that the addition of monoclinic ZrO_2 to the stabilized one increased its heat resistance, the author studied the casting properties of a mixture of 70 % stabilized ZrO_2 with 30 % of monoclinic unheated ZrO_2 in acid medium. They found that best casting properties for this mixture were obtained at pH 1-2, the same as for stabilized ZrO_2 suspensions, but that this mixture had a higher viscosity, a higher casting rate and that its preheating lowered the casts' density. The contraction of casts from this mixture, obtained at pH = 2, with water content = 40 %, evacuated under vacuum, was equal to 14.7 %. There are 4 figures, 1 table and 14 references: 9 Soviet-bloc and 5 non-Soviet-bloc. The 4 references to the English-language publications read as follows: B.C. Weber, W.M. Thomson, H.O. Bilsteen, J. Am. Cer. Soc. 40, 363, 1954; Glass Ind. 331, 1957; P.P. Pierre, Trans. Brit. Cer. Soc., 51, 260, 1952; R.G. Andersen, P. Murrax, J. Am. Cer. Soc. 42, 70, 1959.

Card 4/5

Colloidal and chemical properties ... 27336
S/021/61/000/002/013/013
D210/D303

ASSOCIATION: Ukrayins'koyi N.D. Institut vogue tryviv (Ukrainian
Scientific-Research Institute of Refractory Materials)

PRESENTED: by Member of AS UkrSSR, P.P. Budnikov

SUBMITTED: March 18, 1960

H

Card 5/5

KUKOLEV, G.V., [Kukoliev, H.V.]; PITAK, N.V. [Pytak, M.V.]

Change in the properties of bentonite suspensions due to the effect of peptizers. Dop.AN URSR no.6:772-775 '61.
(MIRA 14:6)

1. Khar'kovskiy politekhnicheskij institut. Predstavleno akademikom AN USSR P. P. Budnikovym.
(Bentonite)
(Colloids)

KUKOLEV, G.V., prof.

Role of ion exchange and of surface-active agents in dross casting
and in other methods of forming ceramic products. Zhur. VKhO 6
no.6:656-662 '61. (MIRA 14:12)

(Ceramic materials) (Ion exchange)
(Surface-active agents)

15.2230

29397
S/131/61/000/011/002/002
B105/B101

AUTHORS: Kukolev, G. V., and Karaulov, A. G.
TITLE: Production of refractory materials by means of pressure casting
PERIODICAL: Ogneupory, no. 11, 1961, 531 - 534

TEXT: The authors report on processes for molding refractory materials by means of hot casting from aluminum oxide with paraffin as a binder and addition of surface-active substances. Industrial alumina of the following chemical composition was used: 0.26 % SiO₂, 98.6 % Al₂O₃, 0.05 % Fe₂O₃, 0.18 % CaO, 0.15 % R₂O, and 0.44 % various substances. It was fired for 4 hr at 1450°C and ground to a grain size of below 2μ. Oleic acid, C₁₇H₃₃COOH, was used as paraffin suspension. Fig. 1 shows a pressure casting installation. The properties of paraffin suspensions from industrial alumina are given in a table. For the manufacture of intricately shaped products it is suitable to mold by casting the suspension of industrial alumina fired at 1450°C, with a grain size of below 2μ. By adding 0.75 %
Card 1/4

X

29397

S/131/61/000/011/002/002
B105/B101

Production of refractory materials by...

primary fatty alcohols, $C_{16} - C_{18}$, it is possible to reduce the amount of paraffin in the suspension from 18 to 13 % and shrinkage during firing from 18.7 to 14.4 %. There are 5 figures, 1 table, and 10 Soviet references.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov
(Ukrainian Scientific Research Institute of Refractories)

Fig. 1. Pressure casting installation. Legend: (1) Upper plate; (2) central plate; (3) three-way cock; (4) lid of the working container; (5) working container; (6) thermostat; (7) lower plate; (8) tightening screw; (9) columns. X

Table. Properties of paraffin suspensions from industrial alumina.
Legend: (a) no. of masses; (b) surface-active substance (admixture); (c) amount of admixture, %; (d) amount of paraffin, %; (e) viscosity at 70°C according to the rate of flow in sec; (f) castability at 65°C, mm; (g) weight by volume, g/cm³; (h) packing coefficient; (i) bending strength limit kg/cm²; (k) amount of binder remaining in the products after its partial removal, %; (l) shrinkage during calcination; (m) without admixture; (n) oleic acid; (o) ditto; (p) alcohols $C_{16} - C_{18}$;
Card 2/4

KUKOLEV, G.V.; MIKHALOVA, K.A.; KOCHETOVA, A.P.

Kaolin refractory materials with the minimum amount of binding clay.
Ogneupory 26 no.5:231-236 '61. (MIRA 14:6)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.
(Kaolin)

KUKOLIN, G.V.

Methods of testing and controlling the production of refractory material. Ogneupory 26 no. 7:139-140 1961. (NIEA 24:7)

1. Khar'kovskiy politekhniceskii institut im. V.I. Lenina.
(Refractory materials)

KUKOLEV, G.V.; KARAULOV, A.G.

Manufacture of refractory articles by casting under pressure. Ogne-
upory 26 no.11:531-534 '61. (MIRA 17:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov.

Kukolev, G.V.

PHASE I BOOK EXPLOITATION

SOV/6202

Budnikov, P. P., Academician, Academy of Sciences UkrSSR, Corresponding Member, Academy of Sciences USSR, A. S. Berezhnoy, I. A. Bulavin, G. P. Kalliga, G. V. Kukolev, and D. N. Poluboyarinov.

Tekhnologiya keramiki i ogneporov (Technology of Ceramics and Refractory Materials). 3d ed., rev. and enl. Moscow, Gosstroyizdat, 1962. 707 p. Errata slip inserted. 15,000 copies printed.

Ed. (Title page): P. P. Budnikov; Ed. of Publishing House: N. A. Gomozova; Tech. Ed.: G. D. Naumova.

PURPOSE: This book is a textbook intended for students taking courses in the technology of silicates at institutions of higher education.

COVERAGE: The book describes the physicochemical and mechanical properties of various ceramic and refractory products, including cermets, pure refractory oxides, glazes, aramic pigments, porcelain, and faience. The raw materials and methods of manufacturing ceramic

Card 1/6

Technology of Ceramics and Refractory Materials

SOV/6202

and refractory products are reviewed. There are 167 references, mostly Soviet.

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Card 2/5

KUKOLEV, G.V., prof.; NEMETS, I.I.; KHOMYAKOV, M.T.

Method of increasing the turnover capacity of sappers.
Stek,i ker. 19 no.9:25-29 S '62. (MIRA 15:9)
(Sappers)

KUKOLEV, G.V., retsenzent

"Reactions in solid mixtures" by P.P.Budnikov, A.M.Ginstling.
Reviewed by G.V.Kukolev. Ogneupory 27 no.7:339-340, 3 of cover
'62. (MIRA 15:8)

(Granular materials)	(Sintering)
(Budnikov, P.P.)	(Ginstling, A.M.)

S/131/63/000/002/001/002
B101/B186

AUTHORS: Kukolev, G. V., Nemets, I. I.

TITLE: Addition of combustible liquids to fireclay pulps for controlling the structure and increasing the fire-resistance of the products

PERIODICAL: Ogneuporny, no. 2, 1963, 85 - 92

TEXT: A method is suggested for influencing the structure of fireclay refractories and increasing the fire-resistance by adding high-viscous hydrophobic organic substances such as black oil, bitumen or paraffins. This results in the formation of microcracks on the surface of the grog grains on the interface with the binder. Specimens were produced by adding black oil (3 - 20 % per weight of grog) to batches consisting of 60 % of grog and 40 % of binder (clay + kaolin 1:1), humidity content 16 %; or 80 % of grog and 20 % of binder, humidity content 5 %. The specimens were burnt at 1260 - 1280°C. The fire resistance was tested by repeated 30-min heating to 1300°C and 5-min quenching in cold water. Results: an addition of 8 - 10 % black oil increased the fire-resistance

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Addition of combustible liquids to ...

S/131/63/000/002/001/002
B101/B186

by 50 to 100 %, but the black oil has to be added to the grog and not to the binder. In the latter case the microcracks were not in the grains but ran parallel to each other throughout the binder, and the fire-resistance was reduced. The linear thermal expansion coefficient, the elasticity, the bending strength, the Poisson ratio and the thermal conductivity decreased when black oil had been added to both the binder and the grog. This indicates that the effect of the organic addition on the fire resistance is due above all to the type of the structure. If the pores are localized on the surface of the grog grains then the fire-resistance increases; it decreases when the pores are formed in the binder. There are 5 figures and 2 tables.

"ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina
(Khar'kov Polytechnic Institute imeni V. I. Lenin)

Card 2/2

S/072/63/000/004/005/005
A051/A126

AUTHORS: Kukolev, G. V., Doctor of Technical Sciences, Professor, Lisovaya.
Ye. D., Junior Scientific Worker

TITLE: Clinkering intensification of glazed mass by combined additions

PERIODICAL: Steklo i keramika, no. 4, 1963, 19 - 22

TEXT: It is suggested that the introduction of additions can affect the activity of a hard material, regulate the structure of the liquid phase, and thereby intensify the clinkering process. The effect of various additions was investigated: Li_2O , Na_2O , K_2O , FeO , Fe_2O_3 , TiO_2 , SnO_2 , MgO , MnO , CeO , CaO , MoO_3 , H_3BO_3 , BaCl_2 , FeCl_3 , CuCl_2 , SnCl_2 , ZnCl_2 , MgCl_2 , etc., on the formation process of mullite and its tensile strength. It was found that the most effective additions are MnO , nepheline syenite, spodumen and MgCl_2 . A glazed mass from the Khar'kov Tile Manufacturing Factory was used for the experiments. Data obtained showed that combined additions can be a great deal more effective than each addition taken separately. An increase in the calcinating rate increases the clinkering process, explained primarily by the occurrence of a more defective

Card 1/2

S/072/63/000/004/005/005
A051/A126

Clinkering intensification of glazed mass by...

structure of the crystalline lattice of the rapid calcination products. The introduction of small amounts of combined additions was found to be an effective means for increasing clinkering (lowering of the calcination temperature) of the glazed mass. The combination of additions of pegmatite - talc is considered promising in this connection. There are 5 figures and 1 table.

ASSOCIATION: Khar'kovskiy politekhnicheskiy institut im. V. I. Lenina.
(Khar'kov Polytechnical Institute im. V. I. Lenin)

Card 2/2

S/063/63/008/002/006/015
A057/A126

AUTHORS: Kukolev, G.V., Professor, Nemets, I.I.

TITLE: Modern ideas on the thermal stability of ceramic refractory materials and methods of increasing it

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleeva, v. 8, no. 2, 1963, 155 - 162

TEXT: The authors review literature data on the increase of the thermal stability of ceramics and refractory materials. The effect of thermal shock and generation of cracks with special respect to thermo-physical characteristics, physico-mechanical and structural properties are investigated intensively at the present time in order to increase the thermal stability. According to theoretical data the resistance to thermal shocks increases with rising strength, heat conductivity, and decreasing elasticity modulus, Poisson's ratio, thermal expansion coefficient of the material and thickness of the article. The authors determined in an earlier publication the specific influence of form and position of defects of the structure of the material on its thermal stability. The basic

Card 1/2

Modern ideas on the thermal stability of

S/063/63/008/002/006/015
A057/A126

shortcoming of the existing methods for the determination of thermal stability of industrial refractory materials is that these methods do not consider changes during the service caused by the penetration of slags, corrosion, and impact ruptures. Crack determination tests by the resonance method need further development. Investigations carried out by the authors revealed that thermal stability of chamotte materials increases (to a certain limit) with porosity, if the pores are located mainly at the surface of the grains of chamotte and binder, but the opposite effect was observed if the porosity increases in the bulk of the binder of the refractory material.

Card 2/2

KUKOLEV, G.V.; LIVSON, Z.A.; BELIK, Ya.G.; KOZLOVA, Ye.I.; LISOVAYA, Ye.D.;
SHOLOMOVA, E.M.

Effective ceramic products made of local clays. Stroi. mat. 9
no.4:4-6 Ap '63. (MIRA 16:5)
(Kharkov—Ceramics)

KUKOLEV, G.V., doktor tekhn.nauk, prof.; LISOVAYA, Ye.D., mladshiy nauchnyy
sotrudnik

Intensified burning of faience pastes using combined additives.
Stek. i ker. 20 no.4:19-22 Ap '63. (MIRA 16:3)

1. Khar'kovskiy politekhnicheskii institut imeni V.I.Lenina.
(Ceramics)

KUKOLEV, G.V.; NEMETS, I.I.

Mixing the grog materials with burning-out fluids to control the structure and increase the heat-resistance of the refractory products. Ogneupory 28 no.2:85-92 '63. (MIRA 16:2)

1. Khar'kovskiy politekhnicheskij institut im. V.I.Lenina.
(Refractory materials)

KUKOLEV, G.V.; KARAULOV, A.G.

Properties of aqueous suspensions, commercial alumina and the efficient conditions of slip casting. Ogneupory 28 no.4:168-174 '63. (MIRA 16:6)

1. Khar'kovskiy politekhnicheskij institut imeni Lenina (for Kukolev). 2. Ukrainskiy nauchno-issledovatel'skiy institut ogneuporov (for Karaulov).

(Aluminum oxide)

(Refractory materials)

KUKOLEV, G.V., referent

Method of manufacturing VLN converter bottoms and repairing
linings in steel smelting plants (from "Refractories in Oxygen
Steelmaking," 1962). Ogneupory 28 no.4:189 '63.

(MIRA 16:3)

(Converters—Maintenance and repair)

L 38495-05 EPR/ENG(s)-2/ERP(a)/ERP(b)/ERP(t) PS-h/Fx-h IJP(c) JD/GS
 S/0000/63/000/000/0245/0252 29
 ACCESSION NR: AT5007740 28

AUTHOR: Kukolev, G.V.; Mel'nik, M.T.; Shapovalova, N.N.; Belik, Ya. G. 28
 6+1

TITLE: Synthesis and study of low-basicity calcium aluminates

SOURCE: AN SSSR, Institut khimii silikatov. Silikaty i oksidy v khimii vysokikh temperatur (Silicates and oxides in high-temperature chemistry). Moscow, 1963, 246-252

TOPIC TAGS: calcium aluminate, aluminate basicity, aluminate synthesis, refractory concrete, cement, refractory filler, bohmite, concrete strength, autoclave solidification

ABSTRACT: Experiments were carried out with the object of preparing refractory concretes (solidifying in an autoclave), including lightweight concretes, from refractory fillers and cement made of CA_2 ($CaO \cdot 2Al_2O_3$). Physicochemical tests of the products showed that the high strength of both dense and lightweight samples of such concrete was preserved after they had been heated at 200 - 1400C. Thermographic and microscopic analyses of the hydration products of CA_2 were performed. The three endothermic effects observed on the differential curves of hydrated CA_2 are interpreted. The comparatively high strength of samples of concrete subjected to autoclave solidification is due to the compaction of the gel and particularly of the large amounts of bohmite

Card 1/2

38495-65

ACCESSION NR: AT6007740

during their gradual dehydration as the water of hydration is removed from the hydration products without any disturbance of the original cement skeleton. The large amount of bohmite in the products of hydrothermal solidification of aluminates cements provides for a smaller decrease in the strength of samples of concrete during their heating. "The microscopic studies were carried out by Docent Ya. G. Belik." Orig. art. has: 3 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 0000063 ENCL: 00 SUB CODE: MT

NO REF SOV: 000 OTHER: 000

Card 2/2/10

GOROSHNIKOV, B.I.; DZHUN', V.S.; KUKOLEV, G.V.; MARCHENKO, Ye.Ya.;
SKOMAROV'KAYA, L.A.; GNASHKA, A.I.; SHCHUKAREVA, L.A.;
YURK, Yu. u.; doktor geol.-miner. nauk, prof.; YUR'YEV,
L.D.; SERDYUK, O.P., red.

[Granitoid rocks in the Azov Sea region and prospects for using them in the ceramic and glass industries] Granitoidnye porody Priazov'ia i perspektivy ikh ispol'zovaniia v keramicheskoi i stekol'nom proizvodstvakh. Pod red. Iu.Iu. Iurka. Kiev, Naukova dumka, 1964. 142 p. (EIRA 17:9)

1. Akademiya nauk URSR. Kiev. Instytut mineral'nykh resursiv.

BUDNIKOV, Petr Petrovich, akademik; OVCHARENKO, F.D., akademik, otv. red.; BEREZHNOY, A.S., red.; BUTT, Yu.M., prof., red.; MCHEDLOV-PETROSYAN, O.P., red.; AVGUSTINIK, A.I., prof.; BARZAKOVSKIY, V.P., doktor khim. nauk, red.; KUKOLEV, G.V., prof., red.; MATVEYEV, M.A., prof., red.; MCHEDLOV-PETROSYAN, O.P., prof., red.; ROYAK, S.M., prof., red.; POKROVSKAYA, Z.S., red.

[Chemistry and technology of silicates] Khimiia i tekhnologiya silikatov. Kiev, Naukova dumka, 1964. 608 p.

(MIRA 17:12)

1. Akademiya nauk Ukr.SSR (for Ovcharenko). 2. Chlen-korrespondent Ukr.SSR (for Berezhnoy). 3. Chlen-korrespondent AN SSSR i deystvitel'nyy chlen Pol'skoy Akademii nauk , AN Ukr.SSR (for Budnikov).

KUKOLEV, G.V.; GRINEVA, A.M.

Some data on the rheology of pastes from mixtures containing
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1. Khar'kovskiy politekhnicheskij institut imeni Lenina.