

**Effect of technological factors on the properties of high-grog shapes from Ural clays.** XV. A. BRON AND D. P. ZEGZHIDA. *Ogneupory*, 15 [4] 106-79 (1950).—The raw materials used were Belkin (I), Buskul (II), Nizhne-Uvel (III), and Bogdanovich (IV) clays. Analysis of I, II, III, and IV showed SiO<sub>2</sub> 46.40, 53.16, 58.56, and 46.48%; Al<sub>2</sub>O<sub>3</sub> + TiO<sub>2</sub> 30.55, 33.17, 28.28, and 38.27%; Fe<sub>2</sub>O<sub>3</sub> 3.25, 1.71, 2.32, and 0.73%; CaO 0.38, 0.44, 0.33, and 0.38%; MgO 0.45, 0.57, 0.65, and 0.51%; and ignition loss 13.24, 11.10, 9.74, and 13.52%, respectively; refractoriness values were 1730°, 1700°, 1670°, and >1730°C. Briquettes made by plastic and semidry methods were fired at 1350° and 1420° and then ground. Mixes were prepared from 80% grog and 20% clay. The grog was first moistened with the slip and mixed; then the binder was added, and the mix was again mixed. The slip contained 85% water and was made from ground clay with 1% sulfite liquor by weight of dry material. Cylinders 38 to 50 mm. were made from the mix under 300 kg./cm.<sup>2</sup>; some were fired at 1350° and held for 4 hr., while others were fired at 1420° to 1430° and held for 12 hr. The shapes were subjected to physicochemical tests, using standard methods; slag resistance was measured by placing an open-hearth slag tablet analyzing CaO 41.66, Fe<sub>2</sub>O<sub>3</sub> 1.88, FeO 3.50, MnO 6.65, MgO 8.05, SiO<sub>2</sub> 28.7, and Al<sub>2</sub>O<sub>3</sub> + TiO<sub>2</sub> 8.82% on top of the shape, heating it in a furnace to 1420°, holding for 12 hr., and then observing the nature and extent of destruction. In making grog from I and III, the water absorption depended on the method of briquetting, being twice as high by the semidry as by the plastic method; for IV, the method of briquetting had practically no effect on the water absorption of the grog. Rise in temperature from 1350° to 1420° resulted in considerable increase in the density of grog from I, in no noticeable change in the density of grog from IV, and in a sharp increase in the porosity of grog from III. Grog from III made by the plastic method exhibited considerable swelling. Sintering of high-grog shapes was considerably affected by the grain size of the grog. When certain temperatures are reached (in this case 1430°), the chief factor, which determines the sintering of the product, is the disperse grog particles (at least not over 0.088 mm.); as the quantity of these particles increases, the sintering improves. Activation of the disperse particles takes place at high temperatures, being 1420° to 1430° in this case. Grains of 0.5 to 0.088 mm. have no effect upon the sintering, and if there is a relatively small content of the 0.088-mm. grains, they hinder the sintering. When the firing temperature is not high enough to activate the disperse grog particles, an excess of these may affect the extent of sintering adversely. In this case, an increase of grains less than 0.5 mm. results in increased porosity; for each group of mixes with a constant content of grains less than 0.5 mm., there is an optimum amount of disperse fractions less than 0.088 mm. The nature of the binding clay had no substantial effect on the density of shapes, but it did affect the temperature of deformation under load. Temperatures of deformation under load were close for I, II, and IV but much lower for III. The moisture content of the mix affected the properties of the shapes substantially; an increase of

MATERIALS INDEX

AS M-S L A METALLURGICAL LITERATURE CLASSIFICATION

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LETTERS

(over)

BRON, V. A.

PA 187T22

USSR/Engineering - Refractories, Technology Jul 51

"Sintering Alumina by Recrystallization," V. A. Bron, Cand Tech Sci, Ural Dept, Inst of Refractories

"Ogneupory" No 7, pp 312-323

*dis*

Investigation of sintering and recrystn of alumina showed thermal treatment and dispersion of alumina do not provide for sufficiently complete sintering in firing below 1,600°. Considerably effective recrystn sintering of alumina may be attained by introduction of titanium dioxide,

LC 187T22

USSR/Engineering - Refractories, Technology (Contd) Jul 51

Aluminate or magnesium titanates, when sintering process intensively develops at 1,400-1,500°, making possible manuf of compact corundum refractories from commercial alumina at lowered temps of burning.

LC 187T22

324

Refractories

1688. The relationship between the wear of refractories and non-metallic inclusions in steel.—Y. A. BLOIN and D. P. ZAGZHEVA (*Ognevoye*, 16, 518, 1951). Various causes of each type of refractory coming in contact with steel (ladle bricks, runner bricks, etc.) on the inclusions forming in it. Expts. with firebrick ladle refractories showed that the refractories are one of the causes of inclusions. The comp. of inclusions showed that the thermal and mechanical actions are of the greatest significance for the wear. Particles of refractory react chemically with FeO and MnO. The quantity and comp. of inclusions separated electrolytically at different stages of the steelmaking process are tabulated. The SiO<sub>2</sub> content in the inclusions of samples taken from the furnace and from the ladle is low (4 times lower than that of Al<sub>2</sub>O<sub>3</sub>). Since the decomp. products from the refractories should always contain more SiO<sub>2</sub> than Al<sub>2</sub>O<sub>3</sub>, refractories cannot be the main cause of inclusions, although they do take part in their formation. (2 figs., 5 tables.)

BRON, V. A.

USSR/Engineering - Refractories 1 Oct 51

"On Recrystallization of Corundum," V. A. Bron,  
Ural Affiliate, All-Union Sci Res Inst of Re-  
fractories

"Dok Ak Nauk SSSR" Vol LXXX, No 4, pp 661-663

Studies recrystn of alumina in case of adding  
titanium-contg minerals, such as  $FeTiO_3$ ,  $MgTi_2O_5$ ,  
and  $MgTiO_4$ , and investigates sintering of alumina  
with such admixts. Results may be used for ob-  
taining corundum by sintering method and for manufg  
compact corundum refractories, with 95-97%  $Al_2O_3$ ,

222125

at firing temp of order of 1,450-1,550°, adap-  
table to industrial practice. Submitted by  
Acad D. S. Belyankin 19 Jul 51.

222125

PA 239T65

USSR/Engineering - Refractories, Forsterite Sep 52

"Forsterite Refractories With Addition of Magnesia Tailings," V. A. Bron, Cand Tech Sci, Ural Br of the Inst of Refractories

"Ogneupory" No 9, pp 406-413

Discusses possibility of using tailings, obtained in flotation of talcum-magnesite, as magnesia addition in fabrication of forsterite refractories out of dunite. Sharp improvement in sintering capacity of forsterite mass may be achieved under condition of fine dispersion of dunite and joint grinding of dunite with

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magnesia admixture. Activation of sintering in this case is explained by destruction of magnetite and magnesioferrite interlayers which separated zones of forsterite crystals in former grains of olivine. This facilitates contact among forsterite crystals and promotes their recrystallization.

239T65

BRON, V.A., kand.tekhn. nauk

Selecting a method for the manufacture of high-alumina refractories.  
Ogneupory 18 no.2:51-52 P '53.  
(Refractory materials)

(MIRA 11:10)

BRON, V.A.; kand. tekhn. nauk; IGNATOVA, T.S., inzh.

Physicochemical conditions for the preparation of non-porous  
highly refractory dinas bricks. Ogneupery 18 no.4:147-154 Ap '53.  
(MIRA 11:10)

1. Ural'skoye otdeleniye instituta ogneupero. (Firebrick)

ERON, V.A., kand. tekhn. nauk

Cerundum refractories with titanium mineralizer. Ogneupery 18  
no.6:247-254 Je '53. (MIRA 11:10)

1. Ural'skiye otdeleniye Instituta ogneuperev.  
(Refractory materials) (Cerundum) (Titanium dioxide)



USSR/Chemistry - Refractories

1 Jul 53

"The Properties of  $Al_2TiO_5$ ," V. A. Bron and A. K. Podnogin

DAN SSSR, Vol 91, No 1, pp 93, 94

Studied the properties of  $Al_2TiO_5$  using petrographic and X-ray methods. The substance has a very low coeff of thermal expansion and a high thermal stability. Suggests using this material for the manufacture of objects ordinarily made of quartz such as crucibles, tubes, etc. In some cases it is superior to quartz due to its high mp. Presented by Acad D. S. Belyaikin (deceased)  
4 May 53.

266T2

BRON, V. A.

USSR/Chemistry - Refractories

1 Aug 53

"The Reaction of the Formation of  $Al_2TiO_5$  in the Solid Phase," V. A. Bron

DAN SSSR, Vol 91, No 4, pp 825-827

Studied the conditions of formation of  $Al_2TiO_5$  in the solid phase. On the basis of kinetic data, found that the reaction of its formation develops an adequate intensity at  $1450^\circ$ . Presented by Acad D. S. Belyankin 27 May 53.

272T6

MAMYAKIN, Petr Sergeyevich; BRON, V.A., redaktor; LUCHKO, Yu.V., redaktor;  
KOVALENKO, N.I., ~~tekhnicheskii~~ redaktor

[Refractory articles; their properties, manufacture technology and use in  
industrial furnaces] Ogneupornye izdeliia; svoistva, tekhnologiia  
izgotovleniia i sluzhba v promyshlennykh pechakh. Sverdlovsk,  
Gos.nauchno-tekhn.isd-vo lit-ry po chernoi i tsvetnoi metallurgii  
Sverdlovskoe otd-nie, 1955. 487 p. (MLBA 8:9)  
(Refractory materials)

"APPROVED FOR RELEASE: 08/22/2000

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CIA-RDP86-00513R000307010016-3"

BRON, V. A.

130-9-7/21

**AUTHORS:** Bron, V.A. (Cand.Tech.Sc.), and Lande, P.A. (Eng.)

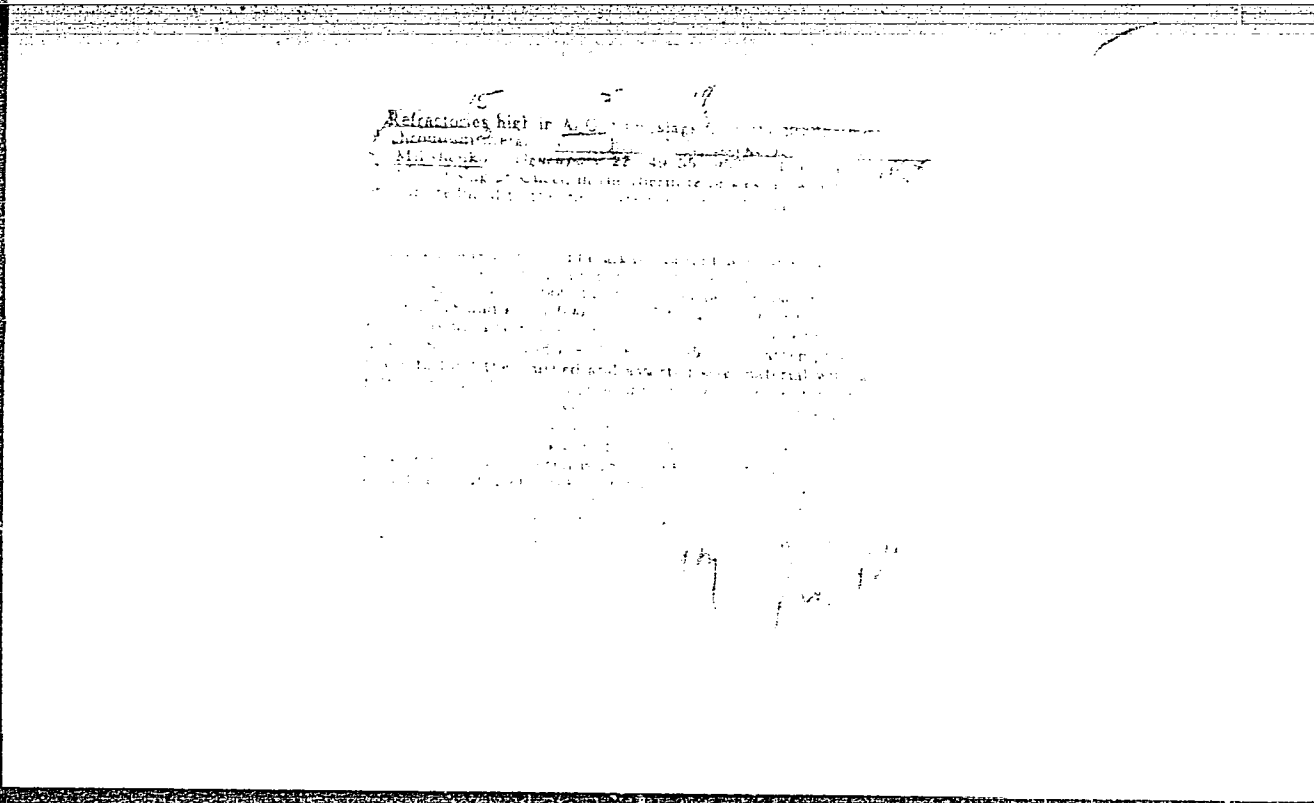
**TITLE:** Alumina-Chromite Refractories for Lining Steel-Pouring Ladles.  
(Glinozemistokhromitovyye ognepory dlya futerovki stalerazlivochnykh kovshey)

**PERIODICAL:** Metallurg, 1957, Nr 9, pp.17-18 (USSR)

**ABSTRACT:** Tests on 100 ton steel-pouring ladles at the Chelyabinsk metallurgical works showed that the durability of a lining of alumina-chromite bricks (77.38%  $Al_2O_3$ , 6.70%  $SiO_2$ , 10.81%  $Cr_2O_3$ , 1.17%  $Fe_2O_3$ , 1.02%  $MgO$ , 3.29%  $R_2O$ ; refractories over 1800°C, porosity at 19.6%) was greatly superior to that of a firebrick one. It is estimated that the service life of alumina-chromite linings could amount to 20-22 heats (compared with 7.6 heats for firebrick). Further investigation is recommended for elucidating factors capable of still further increasing durability, particularly the use of a thinner lining, and for arriving at improved brick-production methods to reduce thermal conductivity. There is 1 figure.

**AVAILABLE:** Library of Congress.

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*Bron, V. A.*

AUTHORS: Bron, V. A., Medyakova, M. V.

131-2-5/10

TITLE: An Investigation of the Dolomite From the Source of Sukhorechensk as a Raw Material for the Production of Metallurgic Dolomite (Issledovaniye dolomitov sukhorechenskogo mestorozhdeniya kak syr'ya dlya proizvodstva metallurgicheskogo dolomita).

PERIODICAL: Ogneupory, 1958, Nr 2, pp. 72-78 (USSR)

ABSTRACT: Judging from the color there exist three types of dolomite: a pale gray, a gray and a deep gray variety. The chemical composition and the physical properties of dolomite are given in table 1. The figure shows the micro structure of dolomite, which is subsequently discussed. The method of Kukolev and Dolgina was employed for an assessment of the sintering power. Tables 2, 3, and 3a give the results of the determination of sintering power. Dolomite showed a considerable increase in weight after the baking process (table 4). In the course of this investigation the influences of additions, as there are tinder, a concentrate of titanium magnetite, titanium dioxide and zirconium dioxide were additionally examined. These investigations also showed, that the wet grinding of dolomite in a ball mill guarantees the sintering of all samples

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An Investigation of the Dolomite From the Source of  
Sukhorechensk as a Raw Material for the Production of  
Metallurgic Dolomite

131-2-5/10

at 1500°C, with and without additions (table 5).  
Subsequently, the problem of sintering is explained and  
illustrated by figures 2, 3 and 4. Among others, the final  
conclusions contain the following statements: The dolomite  
from the source of Sukhorechensk represents a qualified raw  
material for the production of baked metallurgical dolomite.  
With respect to its chemical composition it corresponds to the  
specifications of class 1

МІІТҮ 2660 - 50

The gray variety shows the widest distribution. If dolomite  
is baked in pieces, it sinters at a minimum temperature of  
1700°C, except the pale gray variety, which needs only 1650°C.  
An admixture of tinder of from 2-5 % lowers the sintering  
temperature to 1500-1600°C. The admixtures increase its  
resistivity to hydration.  
There are 4 figures, 6 tables, and 6 references, 5 of which  
are Slavic.

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An Investigation of the Dolomite From the Source of  
Sukhorechensk as a Raw Material for the Production of  
Metallurgic Dolomite

131-2-5/10

ASSOCIATION: Ural Branch of the Leningrad Institute of Refractory Materials,  
(Ural'skoye otdeleniye Leningradskogo instituta  
ogneuporov).

AVAILABLE: Library of Congress

Card 3/3

"Wear Characteristics and Experience Gained in Improving the Life of an Open-Hearth Furnace Bottom," Proizvodstvo stali (Steel Production) Moscow, Mashgiz, 1958. 154 p.

PURPOSE: This book published on the 25th anniversary of the Ural/<sup>mashzavod</sup>(Ural Heavy Machine-building Plant imeni S. Ordzhonikidze) is intended for engineers, technicians and scientific workers concerned with the production of steel.

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SOV/81-59-12-43044

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 12, p 310 (USSR)

AUTHOR: Bron, V.A.

TITLE: On the Effect of the Crystallochemical Properties of Additions on the Sintering of Highly-Refractory Oxides in the Solid Phase

PERIODICAL: Tr. 5-go Soveshchaniya po eksperim. i tekhn. mineralogii i petrogr., 1956, Moscow, AS USSR, 1958, pp 471-478

ABSTRACT: The sintering action of additions on highly-refractory oxides  $Al_2O_3$ ,  $MgO$ ,  $CaO$ ,  $SiO_2$  has been studied. As additions the oxides of metals of various groups of Mendeleev's table were employed from monovalent to pentavalent ones. The oxide to be sintered in the form of a thin powder (particle size  $\leq 10\mu$ ) was mixed with the addition, introduced in the quantity of 2%, in a porcelain mill, later on cylindrical samples of 20 mm in diameter and 20 mm high were pressed, which were burnt at 1,300; 1,400; 1,500 and 1,600°C. The following crystallochemical conditions have been established which determine the sintering action of the cations of the additions on the process of sintering of  $MgO$ ,  $CaO$  and  $Al_2O_3$ : 1) the charge and A. Ye.

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On the Effect of the Crystallochemical Properties of Additions on the Sintering of Highly-Refractory Oxides in the Solid Phase

Fersman's energy coefficient of the cation of the addition should be higher than the charge and the energy coefficient of the cation of the oxide to be sintered; 2) the difference in the radii of the cations of the oxide and the addition should not be  $> 25\%$ ; 3) a ratio of the radius of the cations of the addition to that of the oxide of  $> 1$  is favorable for the sintering process; 4) the most efficient sintering action is shown by additions, the cations of which form with the cations of the sintering oxides diagonal rows in the periodic system. It has been confirmed that the additions which further sintering intensify the accumulative recrystallization. It has been shown that that the additions which form hetero-valent isomorphous mixtures with the sintering oxides, cause in several cases the appearance of solid solutions containing regions with an insufficient quantity of atoms, which produces favorable conditions for the development of diffusion processes. It has been established that there are no additions furthering the recrystallization sintering of  $\text{SiO}_2$ . Oxides containing mono- and bi-valent cations and having small energy coefficient values cannot serve as additions, furthering the sintering of highly-refractory oxides in the solid phase, and frequently inhibit the sintering process.

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From the authors' summary

BRON, V.A.; BOGORODSKIY, A.L.; SEMAVINA, K.P.

Characteristics of wear and the stability of basic open-hearth  
furnace hearths. Sbor.st.UZTM no.3:128-138 '58. (MIRA 11:12)  
(Open-hearth furnaces--Maintenance and repair)

AUTHORS: Bron, V.A., D'yachkov, P.N.

131-58-4-8/17

TITLE: On the Production of Metallurgical Dolomite Powder by the Granulation Method (Ob izgotovlenii metallurgicheskogo dolomitovogo poroshka metodom granulirovaniya)

PERIODICAL: Ogneupory, 1958, Vol. 1, Nr 4, pp. 168-172 (USSR)

ABSTRACT: The authors investigated the possibility of producing powder by the caking together of Dolomite that had been dispersed by dry grinding with additions. The finely ground mixture was later granulated. Yu.F. Mikhaylov participated in this work (Ref 1). Dolomite found at Sukhorechensk (Bilimbay) was granulated, its chemical composition and characteristic features are given. The influence exercised by the fineness of grinding upon granulation and caking of the Dolomite was investigated on the basis of three samples. A number of experiments in which the following additions were used was carried out: scale, titanium magnetite concentrate,  $KMnO_4$ , titanium- and zirconium dioxide. The process of granulation is then described in detail. The granules of raw Dolomite were more dense and more solid than those of burnt Dolomite as may

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On the Production of Metallurgical Dolomite Powder  
by the Granulation Method

131-58-4-8/17

be seen from table 1. Caking Dolomite at 1540 and 1680° and the use of additions is given in table 2. As a result of experiments carried out the following, among other things, was found:

- 1.) The ability to cake of raw granulated Dolomite depends on dispersion.
- 2.) With granulation being equal granulated raw Dolomite cakes better than Dolomite previously burnt at 750°.
- 3.) An addition of 4% scale improved caking considerably.
- 4.) A titanium magnetite concentrate increases caking considerably.
- 5.) An addition of  $KMnO_4$  impedes the caking process of Dolomite.
- 6.) The additions  $TiO_2$  and  $ZrO_2$  noticeably intensify caking at 1680°. Table 3 shows the ability to cake of Dolomite in the case of rapid heating. A schematical drawing shows the production process of burnt and unburnt metallurgical Dolomite powder by the granulation method.

In conclusion it is recommended to produce industrial quantities of these powders and to test them in practice. There are 1 figure, 3 tables, and 5 references, which are Soviet.

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On the Production of Metallurgical Dolomite Powder  
by the Granulation Method

131-53-4-8/17

ASSOCIATION: Ural'skoye otdeleniye Leningradskogo instituta ogneporov  
(Ural Branch of the Leningrad Institute for Refractories)

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AUTHORS: Bron, V. A., Raychenko, T. F. SCV/131-58-8-4/12

TITLE: **Effect of a Gas Medium Upon Forsterite**  
Products During Heating (Vliyaniye gazovoy sredy na forsteritovyie izdeliya pri nagrevanii)

PERIODICAL: Ogneupory, 1958, Nr 8, pp 361-367 (USSR)

ABSTRACT: In a laboratory plant constructed especially for this purpose the influence exercised by an oxidation and regeneration milieu upon refractory forsterite products was investigated. N. N. Uryupina took part in this work (Ref 1). It is further described how these experiments were carried out. Table 1 shows the results obtained after modification of the properties of the sample after treatment both in an oxidizing and in a reducing gas milieu, which are mentioned and described. Moreover, the influence exercised by the gas milieu upon synthetic samples of dunite found at Uktussk with an addition of metallurgical magnesite, technical alumina, and quartzite found at Pervoural'sk was investigated. The test results are given by table 2 and are also described. An investigation of microstructure showed that the mineralogical composition of forsterite products and also their modification depends on

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SOV/131-58-8-4/12  
Effect of a Gas Medium Upon Forsterite Products During Heating

the additions and the milieu, which is shown by figures 1 to 6.

Conclusions: 1) In a laboratory plant the influence exercised by the oxidation and regeneration milieu upon the loosening of refractory forsterite products was investigated. 2) It was found that the regeneration milieu causes loosening of the forsterite products, which is manifested by the increase of the volume and by the permeability to gas. 3) Loosening is caused by damage done to the structure of the products. There are 6 figures, 2 tables, and 5 references, 4 of which are Soviet.

ASSOCIATION: Ural'skoye otdeleniye Leningradskogo instituta ogneuporov  
(Ural' Department of the Leningrad Institute of Refractories)

Card 2/2

15(2)

AUTHORS:

~~Bron, V. A.~~, Dikshteyn, Ye. I., Medyakova, SOV/131-53-12-4/10  
M. V., Nazarov, K. S., Rigmant, N. M.

TITLE:

Increase in Stability and Operation Efficiency of the  
Regenerative Checker Chambers of 400 Ton Martin Furnaces  
(Povysheniye stoykosti i effektivnosti raboty nasadok re-  
generatorov 400-T martenovskikh pechey)

PERIODICAL:

Ogneupory, 1958, Nr 12, pp 545 - 551 (USSR)

ABSTRACT:

The 400 ton Martin furnaces possess small specific volumes of the slag containers and checker chambers (Table 1), which results in an intense impurification by melting dust and a rapid wear of the checker chambers. Chromo-aluminous refractories of the Semilukskiy works were tested ( see paper by V. A. Bron, I. V. Savkevich, R. S. Mil'shenko, Ref 1) in order to increase the stability of the checker chambers. Figure 1 presents the temperature changes of chamotte, forsterite and chromo-aluminous bricks when the butterfly valves are tilted over. The temperatures were measured by M. G. Kozhanov, V. G. Beloshapkin under the supervision of A. M. Kulakov (Ref 2). Figures 2,3,4, and 5 present

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Increase in Stability and Operation Efficiency of the SOV/131-58-12-4/10  
Regenerative Checker Chambers of 400 Ton Martin Furnaces

the state of the checker bricks after 213 meltings. The bricks are covered with melting dust which sometimes is caked together with them. The chemical composition of the melting dust shows (Table 2) that an enrichment of the dust with alumina is effected at the places of contact with chromo-aluminous bricks, which is connected with an increase in refractoriness, as confirmed by the petrographical investigation (carried out by T. F. Raychenko, Ref 3). Table 3 gives the characteristics of chromo-aluminous bricks after operation in the top-most unit of the checker chambers of the air and gas generators. Figure 6 shows the microstructure of the slag cover of a chromo-aluminous brick after working in the top-most unit of the checker chambers of the air generator. Table 4 presents the operation values of the checker chambers of 400 ton Martin furnaces produced from various refractory bricks, as well as the repairs carried out. The thermal conductivity of refractory bricks before and after working in the regenerative checker is demonstrated in figure 7 for chromo-aluminous, dinas, chamotte and forsterite bricks.

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Increase in Stability and Operation Efficiency of the SOV/131-5B-12-4/10  
Regenerative Checker Chambers of 400 Ton Martin Furnaces

Chromo-aluminous bricks yielded the best results. The use of these bricks under simultaneous washing of the checker chambers promotes the reduction of the melting duration and fuel consumption (Fig 8). Conclusions: The use of chromo-aluminous bricks with an alumina content of 78-80% and a chromium oxide content of 9-11% in the upper 8-12 units of the checker chambers increases, in connection with their washing, the stability of the checkers and the efficiency of furnace operation. It is regarded as necessary to improve the methods of washing the checkers and test other highly refractory products in the checkers of the 400 ton Martin furnaces. There are 8 figures, 4 tables and 1 Soviet reference.

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15 (2)

AUTHORS:

Bron, V. A., Bichurina, A. A.

SOV/131-59-5-6/12

TITLE:

Utilization of Ferrous Alloy Slags in the Production of High-alumina Refractories (Ob ispol'zovanii shlakov ferrosplavov dlya proizvodstva vysokoglinozemistykh ogneporov)

PERIODICAL:

Ogneupory, 1959, Nr 5, pp 216-221 (USSR)

ABSTRACT:

An excerpt from the resolution of the 21st Party Congress of the KPSS emphasizing the necessity of opening internal reserves and increasing the production at the present capacities is given as a motto by the authors of this article. Technology and organization of production as well as the utilization of plants and raw materials are to be improved. The slags forming in the production of ferrous alloys by the aluminothermal process are marked by a high content of  $Al_2O_3$  and by high refractoriness. Slag samples of ferrotitanium, ferrochrome free from carbon, nitrogenous ferrochrome, ferroniobium and ferrochrome-aluminum alloy were investigated (Table 1). The petrographic investigations were carried out by T. F. Raychenko (Footnote 1). The properties of the slags are indicated in table 2. The composition of the burning samples

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Utilization of Ferrous Alloy Slags in the  
Production of High-alumina Refractories

SOV/131-59-5-6/12

and the specific weight of the iron slab are indicated in table 3. Table 4 shows the results of control after burning. Table 5 indicates the properties of products made of slags of ferrous alloys. Conclusions: The slags obtained in aluminothermal processes of the ferrous alloy production represent a high-alumina material with a refractoriness of more than 1800°, an Al<sub>2</sub>O<sub>3</sub> content of 69-89 %, and a considerable content of MgO and CaO. High-alumina refractories can be obtained from the slags of ferrochrome free from carbon and of the ferrochrome-aluminum alloy, with an Al<sub>2</sub>O<sub>3</sub> content of 66-86 %. The Al<sub>2</sub>O<sub>3</sub> of the slags is primarily crystallized in the β-modification. The slags of ferrotitanium and of nitrogenous ferrochrome can also be utilized for the production of highly refractory products. 5% refractory clay with a refractoriness of 1710° was introduced as a binding agent. The results of investigation of these slags show that by their utilization in industry the raw-material sources for the production of high-quality refractories can be

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Utilization of Ferrous Alloy Slags in the  
Production of High-alumina Refractories

SCV/131-59-5-5/12

considerably increased. There are 5 tables and 2 Soviet  
references.

ASSOCIATION: Sverdlovskoye otdeleniye Vsesoyuznogo instituta ogneuporov  
(Sverdlovsk Branch of the All-Union Institute of  
Refractories)

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15 (2,

AUTHORS:

Uzberg, A. I., Bron, V. A.

SOV/131-59-10-3/10

TITLE:

An Attempt to Produce Metallurgical Powder With Increased Calcium Oxide Content

PERIODICAL:

Ogneupory, 1959, Nr 10, pp 443-448 (USSR)

ABSTRACT:

The "Magnezit" Works produced experimental sets of such a metallurgical powder from dolomitized magnesite of the Volch'yegorskiy and Gologorskiy sections of the Satkinskoye deposit, which is presently being mined. Table 1 shows the chemical composition of the raw magnesite, table 2 the granulation of dolomitized magnesite after its crushing (Footnote 1), and table 3 the chemical composition of this magnesite in the individual fractions. Table 4 illustrates the welded fractions as well as powders of the fraction 10-0 mm. The chemical composition and granulation of metallurgical powders with increased CaO-content may be seen from table 5. Table 6 contains the chemical composition of the metallurgical powder with increased CaO-content in the individual fractions. The properties of caustic magnesite produced by baking raw material with increased CaO-content are listed in table 7. Table 8 shows the behavior of stored metallurgical powder. Conclusions: The influence exerted by the

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An Attempt to Produce Metallurgical Powder With  
Increased Calcium Oxide Content

SOV/131-59-10-3/10

chemical composition of raw magnesite with increased CaO-content upon the quality of the metallurgical powder was determined by investigating commercial sets. Good sintering at regular operation of a rotary furnace is guaranteed by using raw magnesite with a CaO-content of from 4 to 7% and SiO<sub>2</sub> of from 1.5 to 2%. Magnesite powder with increased CaO-content does not decompose when stored, especially with a CaO-content of 12% as a maximum. At a CaO-content of more than 14% stabilizers are to be added, which needs, however, further investigation. By using magnesites with increased CaO-content, it will be possible to utilize those magnesites which are presently being mined. It is considered necessary to issue specifications for the production of metallurgical powders with increased CaO-content in order to promote their production in the "Magnezit" Works. There are 8 tables and 1 Soviet reference.

ASSOCIATION: Zavod "Magnezit" ("Magnezit" Works), Vostochnyy institut  
Card 2/2 ogneuporov (Eastern Institute for Refractories)

15(2) SOV/131-59-12-5/15  
AUTHORS: 1) Bron, V. A., Khoroshavin, L.B., 2) Petrov, G. A. Vydrina, Zh. A.,  
3) Uzberg, A. I.

TITLE: Use of Metallurgical Ground Magnesite With an Increased Calcium Oxide Content in Open-hearth Furnaces

PERIODICAL: Ogneupory, 1959, Nr 12, pp 553-560 (USSR)

ABSTRACT: At first data and suggestions by Berezhnyy are mentioned and in table 1 the chemical composition of powders used in the USA are indicated. The present paper supplies experimental results of ground magnesite with increased calcium oxide content (of 9.0 to 14.8%). The following researchers participated in the investigation under review: S. N. Galakhmatov, A. S. Pozdnyakov, F. N. Simonenko, T. F. Golikova, E. O. Karnayev, A. V. Chernobrovkin (Ref 1). The chemical composition and graduation of grain sizes of ground magnesite may be seen from table 2, on the strength of which the powders of the first set may be designated coarse-grained (of the type MPK) and the rest fine-grained (of the type MPM). The amount of experimental powder used for lining the furnace bottoms and repairs

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SOV/131-59-12-5/15  
Use of Metallurgical Ground Magnesite With an Increased Calcium Oxide Content  
in Open-hearth Furnaces

of furnaces is given in table 3. Table 4 shows the chemical composition of slags. The petrographic investigation of the slag was carried out by T. F. Raychenko (Ref 2). The specific consumption of experimental powder is given in table 5. Table 6 lists the characteristics of hot repairs of furnace bottoms and table 7 the comparative stability of furnace bottoms with respect to experimental powder and ground magnesite of the type MPE. The chemical composition of furnace bottoms may be seen from table 8. In figures 1 to 4 microstructures of furnace bottoms are shown. In conclusion the authors state that cermets with increased calcium oxide content (up to 9-14%) are not inferior with regard to stability to those of ground magnesite of type MPE and MPK in furnace repair according to test results. Investigation of physical and chemical conditions of forming and wear of open-hearth furnaces showed that a variation of the CaO content within 4-5 up to 12-14% does not exert a considerable influence on these processes. Thus it is possible to use such kinds of powders in open-hearth furnaces. There are 4 figures, 8 tables, and 4 references, 3 of which

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Use of Metallurgical Ground Magnesite With an Increased Calcium Oxide Content  
in Open-hearth Furnaces

SOV/131-59-12-5/15

are Soviet.

ASSOCIATION: 1) Vostochnyy institut ogneuporov (Eastern Institute of Refrac-  
tories) 2) Nizhne-Tagil'skiy metallurgicheskiy kombinat (Nizhniy  
Tagil Metallurgical Kombinat) 3) Zavod "Magnezit" (Works  
"Magnezit")

Card 3/3

15 (2)

AUTHORS:

Bron, V. A., Bichurina, A. A.S/131/60/000/02/003/014  
B015/B008

TITLE:

Periclase<sup>2</sup>-forsterite Products From Siliceous Magnesite

PERIODICAL:

Ogneupory, 1960, Nr 2, pp 58-63 (USSR)

ABSTRACT:

The properties and application of periclase-forsterite products manufactured from siliceous magnesites of the Beloretsk deposit are described in the paper under review. The influence of various additives on the sintering of siliceous magnesite was investigated (Fig 1). The properties of the periclase-forsterite products, dependent on the content of the fine magnesite fractions, are shown in figure 2 and those depending on the amount of pressure applied, in figure 3. The porosity is greatly reduced and the strength increased (Table 1) by introducing the additives  $TiO_2$  and  $ZrO_2$ . The periclase-forsterite products exhibit a high deformation temperature under load (Table 2). Their chemical composition is mentioned in table 3 and their properties in table 4. The chemical composition of the periclase-forsterite bricks after their application in a regenerator can be seen from table 5 and their properties from table 6. Their thermal conductivity is shown

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Periclase-forsterite Products From Siliceous  
Magnesite

S/131/60/000/02/003/014  
B015/B008

in figure 4 and their microstructure in figures 5-7. The authors state in conclusion that the periclase-forsterite products from siliceous magnesite of the Beloretsk deposit exhibit high quality indices. The density of these products varies within wide limits, dependent on the grain of the mass, amount of pressure applied, burning temperature and additives. TiO<sub>2</sub> and ZrO<sub>2</sub> are described as the most effective sintering additives. The periclase-forsterite products show a high stability during their application in regenerators of Martin furnaces. A further investigation of their manufacturing process and their properties is described as being necessary. There are 7 figures, 6 tables, and 4 Soviet references.

ASSOCIATION: Vostochnyy institut ogneporov (Eastern Institute of Refractories)

Card 2/2



S/131/60/000/009/002/008/XX  
B021/B052

AUTHORS: Bron, V. A., Simonov, K. V., Rigmant, N. M.

TITLE: Production and Use of Blocks for Heat Insulation

PERIODICAL: Ogneupory, 1960, No. 9, pp. 400 - 404

TEXT: The Vsesoyuznyy nauchno-issledovatel'skiy institut metallurgicheskoy teplotekhniki (All-Union Scientific Research Institute of Metallurgical Heat Engineering) developed blocks for heat insulation of the tubing of industrial furnaces. They consist of segments of fireclay, kaolin, or magnesite-chromite attached to metal rings. The binding material used was clay, water glass, aluminiferous cement, and sulfite-alcohol vinasse.

Compressive strength was between 71 and 198 kg/cm<sup>2</sup>; porosity varied from 18.4 to 21.5%. The destruction of fireclays and kaolin set in after a fortnight, whereas magnesite-chromite insulation lasted 4-6 months with oil firing, and 12 months with gas firing. Used blocks of magnesite-chromite were chemically and petrographically examined. Accumulation of

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Production and Use of Blocks for  
Heat Insulation

S/131/60/000/009/002/008/XX  
B021/B052

magnetite and hematite (50.01%  $\text{Fe}_2\text{O}_3$ , 5.73%  $\text{FeO}$ ) occurred in the zone exposed to the flame. The petrographic examination was carried out by L. Ya. Pivnik. The use of blocks for heat insulation reduces the heat loss to one-third; the heating of semiproducts is considerably improved. Magnesite-chromite masses with a 5% content of clay, and 4% of sulfite-alcohol vinasse or 7% of water glass proved to be most suitable for the production of insulating blocks. The mechanical strength of unfired blocks is increased by pressing, and their porosity is decreased. Magnesite-chromite block insulation has been successfully applied in rolling-mill furnaces of the Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine). There are 6 figures and 3 tables. ✓

ASSOCIATION: Vostochnyy institut ogneporov (Eastern Institute of Refractory Materials) Bron V. A., Simonov, K. V.; Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine) Rigmant, N. M.

Card 2/2

24665

15.2230

S/081/61/000/009/009/015  
B101/B203

AUTHOR: Bron, V. A.

TITLE: Effect of admixtures on the sintering of periclase

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 9, 1961, 322, abstract  
9K256 (9K256) ("Tr. Vost. in-ta ogneuporov, 1959, vyp. I,  
104 - 118)

TEXT: The effect of admixtures on the sintering of periclase in solid phase depends on the energy characteristics of the cations of admixtures and the ionic radii of the cations. The sintering effect of admixtures increases with rising energy coefficient of A. Ye. Fersman of the admixture cation and with falling ratio between the ionic radii of the admixture cations and the oxide sintered. The admixtures  $TiO_2$  and  $ZrO_2$  are particularly efficient. The admixtures reduce the microhardness of the sintered periclase and affect the microstructure of products. The sintering effect of admixtures in industrial products depends on the presence of impurities. [Abstracter's note: Complete translation]

X

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35L 3L

S/081/62/000/004/055/087  
B150/B138

15.3200

AUTHORS: Bron, V. A., Medyakova, M. V.

TITLE: The mechanical strength of highly refractory magnesia cements and magnesite-chromite concretes

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 395, abstract 4K371 (Tr. Vost. in-ta ogneuporov, no. 2, 1960, 143-161)

TEXT: The properties of magnesia cements were investigated, including periclase cement; and of concretes based on these cements and aggregates of magnesitechromite brick after use in the roofs of open-hearth furnaces. The periclase cement was prepared from metallurgical magnesite; the setting process was studied with the use of the electrolytic salts  $MgCl_2$ ,  $MgSO_4$  and  $Na_2O \cdot mSiO_2$ . It was found that cements with  $MgCl_2$  additives have greater mechanical strength than those with  $MgSO_4$ . Addition of electrolytes not only increases the strength of the cement, but also rapidly accelerates setting. In the softening range (400-1000°C), the cement with  $MgSO_4$  additive softens least. The strength of periclase  
Card 1/2

The mechanical strength of ...

S/081/62/000/004/055/087  
B150/B138

cement decreases with water glass and  $\text{Na}_2\text{SiF}_6$ . The possibilities of used pulverized magnesitechromite brick as a cement for concrete, were also studied, i.e. of using the material already employed as an aggregate. Under air-drying conditions, this is not as hard as periclase cement but it softens less on heating and can be used for refractory concretes. It is known as periclase-spinellide cement. A study of the properties of magnesitechromite concretes from both cements established that pneumatic tamping increases the hardness of concrete samples more than does vibratory ramming. Magnesitechromite concrete from periclase-spinellide cements with an addition of  $\text{MgSO}_4$  were successfully tests in the wall of

an electric steel melting furnace. [Abstracter's note: Complete translation.]

Card 2/2

BUDNIKOV, P.P.; BRON, V.A.; KHOROSHAVIN, L.B.

Dicalcium silicate and its properties. Trudy MKHTI no.36:15-43  
'61. (MIRA 15:7)

(Silicates)

BRON, V.A.; ZAMOTAYEV, S.P.; MEDYAKOVA, M.V.; SEMAVINA, K.P.; KHORSHAVIN,  
L.B.

Production and plant testing of magnesite-chromite concrete. Ogneupory  
26 no.3:115-123 '61. (MIRA 14:4)  
(Refractory concrete)

BRON, V.A.; KHOROSHAVIN, L.B.; ISUPOV, V.F.; KLYUKINA, L.Z.

Lining the forked steel pouring spouts of open-hearth furnaces with refractory concrete. Ogneupory 26 no.6:265-269 '61. (MIRA 14:7)

1. Vostochnyy institut ogneuporov (for Bron, Khoroshavin).
2. Metallurgicheskiy kombinat imeni Serova (for Isupov, Klyukina).

(Open-hearth furnaces--Equipment and supplies)  
(Refractory concrete)



43302

5/226/62/000/005/003/007  
E202/E192

1.1600

AUTHOR: Bron, V.A.

TITLE: Some crystallo-chemical regularities occurring during the activated sintering of refractory oxides in the solid phase

PERIODICAL: Poroshkovaya metallurgiya, no.5, 1962, 36-42

TEXT: Relations between the relative temperature of sintering RTS, defined as  $(T_{sint.}/T_{melt.}) \cdot K$ , and the crystalline lattice energy, were studied in the following oxides:  $Li_2O$ ,  $Na_2O$ ,  $K_2O$ ,  $CaO$ ,  $MgO$ ,  $BeO$ ,  $SiO_2$ ,  $TiO_2$ ,  $ZrO_2$ ,  $Cr_2O_3$  and  $Al_2O_3$ . The total contaminants in these oxides did not exceed 0.1%. Samples in the shape of 15 mm diameter cylinders were pressed under a pressure of 1000 kg/cm<sup>2</sup> and baked at various temperatures from 400 °C onwards. The curve relating the compressive strength of the sinters and their baking temperature showed a precisely defined bend characterising the sintering temperature. The latter was expressed as an index comparing various oxides of approximately equal specific surface of particles

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Some crystallo-chemical regularities... S/226/62/000/005/003/007  
E202/E192

( $\sim 2 \text{ m}^2/\text{g}$ ) and identical compacting and thermal treatment of samples. The RTS was also plotted against the lattice energy, showing that all the above oxides are lying along a straight line grouped according to the ascending valency of the metal. For oxides of given valency it was found that the relative temperature of sintering decreases with the increasing ratio of cation/anion radius. Generally, the lowering of the coordination number increased the strength of the internal bondings. The author discusses briefly various types of activating mechanisms and studies in detail the effect of

$\text{Sc}^{3+}$ ,  $\text{Ti}^{3+}$ ,  $\text{Ti}^{4+}$ ,  $\text{Zr}^{4+}$ ,  $\text{Mn}^{3+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Cr}^{3+}$ ,  $\text{Si}^{4+}$ , and  $\text{Nb}^{5+}$  additives on the sintering of  $\text{MgO}$ ,  $\text{CaO}$ ,  $\text{Al}_2\text{O}_3$  and  $\text{SiO}_2$  refractories. It was found that the effective activating additives are these which develop vacancies in the cation part of the oxide lattice. However, if the added cations have lower valency than those present in the oxide to be sintered, the sintering process is retarded or even stopped. The additives were found also to modify the structure of the sinter by modifying the form and size of the crystallite.

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Some crystallo-chemical regularities.. S/226/62/000/005/003/007  
E202/E192

ASSOCIATION: Vostochnyy nauchno-issledovatel'skiy i proyektnyy  
institut ognepornoy promyshlennosti  
(Eastern Scientific Research and Design Institute  
of the Refractory Industry)

SUBMITTED: December 2, 1961

Card 3/3

BRON, V.A.

"Dinas" by I.S.Kainarskii. Reviewed by V.A.Bron. Ogneupory 27  
no.2:94-96 '62. (MIRA 15:3)  
(Firebrick) (Kainarskii, I.S.)

BRON, V.A.

Physicochemical principles of increasing the stability of open-hearth furnace bottoms using high-speed repair methods. Ogneupory 27 no.5: 218-223 '62. (MIRA 15:7)

1. Vostochnyy institut ogneuporov.  
(Open-hearth furnaces—Maintenance and repair)  
(Refractory materials)

S/081/62/000/024/063/073  
B166/B186

AUTHORS: Bron, V. A., Stepanova, I. A., Nesterova, N. M.

TITLE: Sintering and forsterite formation in the Mg - SiO<sub>2</sub> system

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 24, 1962, 570, abstract  
24K222 (Tr. Vost. in-ta ogneuporov, no. 3, 1961, 240 - 261)

TEXT: Studies have been made of the processes involved in forming forsterite and in sintering periclase-forsteritic and forsteritic finely dispersed masses, so as to find ways of producing periclase-forsteritic and forsteritic refractories with enhanced density. Forsterite was synthesized both from pure oxides MgO - SiO<sub>2</sub> and from commercially pure products (dunite, quartzite, marshalite and broken silica refractories). The raw materials were ground to a particle size of 4 - 5 μ. The specimens were burned in a Kryptol kiln. It was found that at 1400 - 1450°C the process of forsterite formation in blends of commercially pure products depends on the properties of the silica-containing additions; at higher temperatures the properties of these additions do not affect forsterite formation. The rate of forsterite  
Card 1/2

Sintering and forsterite ...

S/081/62/000/024/063/073  
B166/B186

formation rises with the introduction of  $TiO_2$ ,  $ZrO_2$ ,  $Al_2O_3$  and  $Na_2O$  and is slowed down by the introduction of  $CaO$ . It was found that forsterite can be sintered in the liquid and solid phases. A study of the microstructure of forsterite refractories showed that their microstructure can be considerably improved by using magnesite - quartzite blends instead of magnesite - dunite. It was demonstrated that sintering of periclase-forsteritic specimens deteriorates with increase in silica content and can be greatly intensified by the introduction of additions,  $TiO_2$  and  $ZrO_2$  being the most active additions for this purpose. At lower temperatures contact sintering is important; it proceeds with greater intensity in magnesite - dunite blends. [Abstracter's note: Complete translation.]

Card 2/2

BRON, V.A.; SEMKINA, N.V.

Factors determining activated recrystallization sintering of aluminum oxide. Porosh.met. 2 no.5:26-35 S-0 '62.

(MIRA 15:11)

1. Vostochnyy nauchno-issledovatel'skiy i proyektnyy institut ogneupornoy promyshlennosti.

(Aluminum oxide) (Sintering)



BRON, V.A.

Certain crystallochemical regularities in the activated sintering  
of highly refractory oxides in the solid phase. Porosh.mst. 2  
no.5:38-42 S-0 '62. (MIRA 15:11)

1. Vostochnyy nauchno-issledovatel'skiy i proyektnyy institut  
ogneupornoy promyshlennosti.  
(Oxides--Thermal properties) (Sintering)

ERON, V.A.; Primali uchastiye: Khoroshavin, L.B.; MEDYAKOVA, M.V.

Effect of the granular composition of magnesite powders on the  
properties and service of open-hearth furnace bottoms. Stal.  
22 no.12:1078-1081 D'62. (MIRA 15:12)

1. Vostochnyy institut ogneporov.  
(Open-hearth furnaces--Maintenance and repair)  
(Granular materials)

BRON, V. A.; UZBERG, A. I.; DİYACHKOV, P. N.; KUZNETSOV, Yu. A.

Use of caustic magnesite dust for the production of metallurgical powder. Trudy Vost. inst. ogneup. no.2:6-25 '60.  
(MIRA 16:1)

(Refractory materials) (Fly ash)

BRON, V.A.; SIMONOV, K.V.; CHIKUROV, I.F.; UZBERG, A.I.

Magnesite brick with a spinel bond for the walls of high capacity electric arc furnaces. Ogneupory 27 no.8:345-350 '62. (MIRA 15:9)

1. Vostochnyy institut ogneuporov (for Bron, Simonov). 2. Zavod "Magnezit" (for Chikurov, Uzberg). (Firebrick)

STRELOV, K.K.; MAMYKIN, P.S.; Primalni uchastiye: BAS'YAS, I.P.;  
BICHURINA, A.A.; BRON, V.A.; VECHER, N.A.; VOROB'YEVA, K.V.;  
D'YACHKOVA, Z.S.; D'YACHKOV, P.N.; DVORKIND, M.M.;  
IGNATOVA, T.S.; KAYBICHEVA, M.N.; KELAREV, N.V.;  
KOSOLAPOV, Ye.F.; MAR'YEVICH, N.I.; MIKHAYLOV, Yu.F.;  
SEMKINA, N.V.; STARTSEV, D.A.; SYREYSHCHIKOV, Yu.Ye.;  
TARNOVSKIY, G.I.; FLYAGIN, V.G.; FREYDENBERG, A.S.;  
KHOROSHAVIN, L.B.; CHUBUKOV, M.F.; SHVARTSMAN, I.Sh.;  
SHCHETNIKOVA, I.L.

Institutes and enterprises. Ogneupory 27 no.11:499-501  
'62. (MIRA 15:11)

1. Vostochnyy institut ogneuporov (for Strellov). 2. Ural'skiy  
politekhnicheskiy institut im. S.M. Kirova (for Mamykin).  
(Refractory materials--Research)

BRON, V. A.; DIYESPEROVA, M. I.; SANOK, N. A.; Prinsipali uchastiye:  
SEMAVINA, K. P.; BARMIN, A. N.

Interaction of refractories with manganese steel. Trudy Vost.  
inst. ognep. no.2:83-100 '60. (MIRA 16:1)

(Refractory materials) (Manganese steel)

BRON, V. A.; MEDYAKOVA, M. V.

Mechanical strength of highly refractory magnesia cements  
and magnesite-chromite concrete. Trudy Vost. inst. ogneup.  
no.2:143-161 '60. (MIRA 16:1)

(Refractory concrete—Testing)

BRON, V.A.

Studying phase constitution and structure of laboratory specimens  
imitating the composition of open-hearth furnace bottoms. Ogneupory  
28 no.1:35-42 '63. (MIRA 16:1)

1. Vostochnyy institut ogneuporov.  
(Refractory materials--Testing)



BROM, V.A.; SIMONOV, K.V.; PIVNIK, L.Ya.; PETROV, V.K.; BARVINSKIY, B.V.

"Lining the walls of 100-ton arc furnaces with magnesite brick  
and a spinel binding. Stal' 23 no.6:519-523 Je '63.

(MIRA 16:10)

BRON, V.A.; SEMAVINA, K.P.

Chromo-alumina concrete and block products. Ogneupory 28  
no.9:385-388 '63. (MIRA 16:10)

1. Vostochnyy institut ogneuporov (for Bron). 2. Ural'skiy zavod  
tyazhelogo mashinostroyeniya imeni Sergo Ordzhonikidze (for Semavina).

L 25789-65 EWP(e)/EWT(m)/T WH

ACCESSION NR: AR4040350

S/0081/64/000/006 MOFF MOFF

SOURCE: Ref. zh. Khimiya. Abs. 6M42

AUTHOR: Bron, V. A.; Medyakova, M. V.

TITLE: Magnesia refractories with a high content of calcium oxide

CITED SOURCE: Tr. Vost. in-ta ogneporov, vyp. 4, 1963, 57-72

TOPIC TAGS: refractory, magnesite, dolomite, magnesia refractory, calcium oxide, calcium silicate, vinasse

TRANSLATION: Magnesite with a high content of CaO can be used for the manufacture of highly refractory parts, both by the usual technical methods (at a CaO content  $\leq 5-6\%$ ) and on the basis of a stabilized magnesia-dolomite clinker. A decrease in the tendency toward crack formation due to thermal expansion with a high content of CaO is achieved by the introduction of  $HgCl_2$  and sulfuric alcohol vinasse. High quality magnesite parts with a high content of CaO can be obtained on the basis of a synthetic stabilized clinker prepared from dolomitized magnesite with  $SiO_2$ -containing admixtures which yield dicalcium- and tri-calcium

Card 1/2

L 25789-65

ACCESSION NR: AR4040350

silicate on reaction with CaO. The parts are manufactured by semi-dry pressing using a granulation process. From the authors' summary

SUB CODE: MT 10

ENCL: 00

Card 4-2

L 25352-65 EWP(e)/EWT(m)/T WH

ACCESSION NO: AP4039574

S/00811641000 001701 1/1

SOURCE: Ref. zh. Khimiya, Abs. 5M48

AUTHOR: Bron, V. A.; Stepanova, I. A.; Nesterova, N. S.

TITLE: Preparative techniques, properties and uses of synthetic periclase-forsterite refractories

CITED SOURCE: Tr. Vost. in-ta ogneuporov, vy\* p. 4, 1963, 73-88

TOPIC TAGS: periclase, forsterite, brick manufacture, fire brick, open hearth furnace, furnace checker, sintered magnesite, dunite, furnace regenerator, brick mechanical property

TRANSLATION: A technical process was developed for the production of synthetic periclase-forsterite parts based on sintered magnesite with a high content of silica, obtained by the slime process, and dunite. The special feature of the process is that the periclase-forsterite bond is obtained by sintering of the dunite with part of the magnesite. The properties of the parts were as follows: compressive strength, 329-951 kg/cm<sup>2</sup>; porosity, 18.0-23.0%; density, 2.66-2.83 g/cc; temperature of deformation under stress: 1470-1550C for the onset of softening and 1520-1630C for destruction. A test of brick in the

Cer 1/2

J. 25352-65

ACCESSION NR: AR4039576

checked brickwork of the air and gas regenerators of open-hearth furnaces showed that the material was highly stable in use (with the exception of the 2-3 upper rows in which the parts cracked under the influence of melt spray and temperature fluctuations). In the checkers of the regenerators of open-hearth furnaces of low tonnage, heated by fuel oil, periclase-forsterite brick makes possible the heating of the checkers during the entire run. From the authors' summary.

SUB CODE: MT

ENCL: 00

Card 2/2

TOPIC TAGS: ...

...

TITLE: ...  
rare earths, titanium dioxide

...  
110-117

TOPIC TAGS: ...  
ceramic structure, ...

...







L 38506-65

ACCESSION NR: AT5907730

at the ... temperatures of 700-900C, the rate of ...  
by a ...

FORM ...  
SECRET ...

SECRET SOV. 009 OTHER: 008

Card 2/2

BRON, V.A.; MEDYAKOVA, M.V.

Magnesites from the Larginskoye deposit. Ogneupory 29 no.2:72-79 '64.  
(MIRA 17:1)

1. Vostochnyy institut ogneuporov.

BRON, V.A.; BIYESPEROVA, M.I.; KROTOVA, G.S.

Effect of additives, dispersion, and the firing temperature  
on the sintering of caustic dust. Ogneupory 29 no. 5:221-226  
'64. (MIRA 17:7)

1. Vostochnyy institut ogneuporov.

BRON, V.A.

..... About refractories in N.A. Vsochera's book "Highly efficient operation  
of open-hearth furnaces." Ogneupory 29 no.7:336 '64.

(MIRA 18:1)

STEPANOVA, I.A.; BRON, V.A.

Krasnoufinsk dolomites as raw material for metallurgical powder  
and resin dolomite products. Ogneupory 30 no.4:16-20 '65.  
(MIRA 18:6)

1. Vostochnyy institut ogneuporov.

BRON, V.A.; DIYESPEROVA, M.I.; PIVNIK, I.Ya.

Influence of the composition in granular and disperse  
components of magnesite-chromite and periclase-spinel  
products under the effect of iron oxides. Ogneupory 31  
no.1:44-52 '66. (MIRA 19:1)

1. Vostochnyy institut ogneuporov.

ACC NR: AP6016651 (A) SOURCE CODE: UR/0131/66/000/001/0044/0052

AUTHORS: Bron, V. A.; Diyesperova, M. I.; Pivnik, L. Ya.

47  
46  
B

ORG: Eastern Institute for Refractories (Vostochnyy institut ogneporov)

TITLE: The effect of the composition of granular and dispersed components of chromite-magnesite and periclase-spinel products on their properties and behavior with respect to interaction with iron oxides

SOURCE: Ogneupory, no. 1, 1966, 44-52

TOPIC TAGS: refractory, refractory compound, refractory oxide, refractory product, chromium oxide, iron oxide, magnesite, magnesium oxide, chemical composition

ABSTRACT: The effect of composition on the properties of granular and dispersed chromite-magnesite and periclase-spinel refractories was studied. The interaction of the refractories with oxides of iron was also determined. The effect of iron oxide on the stability of the refractories was determined by the method of M. I. Diyesperova and V. A. Bron (Trudy Vostochnogo instituta ogneporov, vyp. 5, 1964), and the microstructure of the refractories was studied. The experimental results are tabulated, and photographs of the microstructure of specimens are presented. It was found that the composition of the granular and dispersed components has a great influence on the properties of the refractories. Magnesite-chromite refractories formed by introduction of part of the chromite component in the dispersed form show a greater stability towards iron oxide than specimens derived from granular chromite. The periclase-spinel

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UDC: 666.856:620.193.3



L 37748-66

ACC NR: AP6016651

refractories, as compared with the magnesite-chromite refractories, exhibit (for the same degree of dispersion) a higher deformation temperature, lower porosity, lower gas permeability and a considerably higher stability towards the loosening effect of iron oxide. G. S. Krotova participated in the experiments. Orig. art. has: 5 tables and 6 figures.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 006/ OTH REF: 001

Card 2/2 *20*

L 06131-67 EWT(m)/EWP(e)/EWP(t)/ETI IJP(e) JD/JJ/WH  
ACC NR: AP6030768 (A) SOURCE CODE: UR/0363/66/002/009/1586/1591

AUTHOR: Bron, V. A.; Diyesperova, M. I.

ORG: Eastern Institute of Refractories, Sverdlovsk (Vostochnyy institut ogneporov)

TITLE: Kinetics of isothermal low temperature sintering of magnesium oxide, obtained from crystalline magnesium carbonate

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 2, no. 9, 1966, 1586-1591

TOPIC TAGS: sintering, magnesium oxide, refractory

ABSTRACT: The investigation of the sintering of magnesium oxide was undertaken because of the lack of information of the kinetics of this process and the importance of magnesium oxide in high temperature technology. The magnesium oxide, produced from magnesium carbonate, consisted of particles preliminarily fired at 600-1000°C. At the same time, activated magnesium oxide, fired for a second time at 1000°C, was also investigated. Sintering kinetics were investigated by stepwise heating with isothermal holding for 10 hr and by lowering specimens into a furnace, preheated to the desired temperature and holding at that temperature for 5 hr. After firing, magnesium oxide specimens pressed at 500 kg/cm<sup>2</sup> were tempered, and their porosity, shrinkage and density were determined. It was found that isothermal sintering by magnesium oxide prefired at low temperature proceeds in two stages; the initial stage being characterized by

UDC: 546.46'45 : 536.421.5

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L 06131-67

ACC NR: AP6030768

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a large rate constant and the second by a low rate constant. The energy of activation of sintering in the initial period is 2.4 and 4.1 times lower for low temperature firing and 1000°C activated magnesium oxide respectively, than it is for the secondary period. The kinetic sintering curves in both periods obey the equation

$$\Delta V/V = k\sqrt{t}$$

where  $\Delta V/V$  is the change of volume;  $t$  is time and  $k$  is the proportionality constant. One of the reasons for the high sintering rate of low-temperature pretreated magnesium oxide in the initial period is the presence of crystal lattice defects which occur during rearrangement of the previously existing magnesium carbonate lattice into the periclase lattice. The greatest rate of periclase crystal lattice growth is observed in the transition region between the primary and the secondary sintering periods. X-ray diffraction analyses were performed by L. P. Sudokova and the petrographic analysis by M. V. Medyakova. Orig. art. has: 7 figures, 2 tables.

SUB CODE: 07,11/

SUBM DATE: 04Oct65/

ORIG REF: 013/

OTH REF: 003

Refractory Compound

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Card 2/2 LC

BRON, V.I., inzhener.

Methods for shortening the stopover of local cars in freight  
stations. Zhel.der.transp. 37 no.10:75 0 '55. (MIRA 9:1)

1.Stantsiya Kulunda.  
(Mailroads--Freight)

1 Jul 53

USSR/Chemistry - Refractories

"The Properties of  $Al_2TiO_5$ ," V.Z. Bron and A.K. Podnogin

DAI SSSR. Vol 91, No 1, pp 93-94

Studied the properties of  $Al_2TiO_5$  using petrographic and X-ray methods. The substance has a very low coeff of thermal expansion and a high thermal stability. Suggests using this material for the manufacture of objects ordinarily made of quartz such as crucibles, tubes, etc. In some cases it is superior to quartz due to its high mp. Presented by Acad D.S. Belyankin (deceased) 4 May 53.

266T2



BRON, Yakov Abramovich; NOSALEVICH, I.M., otvetstvennyy redaktor; SINYAVSKAYA, Ye.K., redaktor izdatel'stva; ANDREYEV, S.P., tekhnicheskiy redaktor

[Operators of tubular aggregates for processing coal tar; a manual for workers] Apparatchiki trubchatogo smoloperegonnogo agregata; uchebnoe posobie dlia rabochikh. Khar'kov, Gos. nauchno-tekh. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 183 p. (MIRA 10:2)  
(Coal tar) (Coke ovens)

BRON, Ya.A.

Suggestions of the interplant school of workers of continuous tar-processing sections. Koks i khim.no.7:44-46 '56. (MLBA 9:12)

1. Ukrainskiy uglekhimicheskiy institut.  
(Coal tar) (Distillation)



*Bron, Ya. A.*

68-10-9/22

AUTHORS: Nosalevich, I.M., Bron, Ya.A. and Ocheret, A.S.

TITLE: Improvement of Rectification of Coal Tar on Continuous Pipe Stills (Usovershenstvovaniye rektifikatsii kamennougol'noy smoly na trubchatykh ustanovkakh nepreryvnogo deystviya)

PERIODICAL: Koks i Khimiya, 1957, Nr 10, pp.36-38 (USSR)

ABSTRACT: By increasing the number of plates in the fractionating column to 43 (an increase of 6 plates) on the Makeyevsk tar distillation plant, a systematic production of an 80% naphthalene fraction was obtained. Further treatment of this fraction is carried out according to the following scheme: crystalliser - press, by-passing intermediate enrichment on the centrifuge. The number and distribution of the plates in the column before and after redesign of the column (Table 1), qualitative characteristics of the individual fractions (Table 2), operating conditions of the still (Table 3), the distribution of naphthalene and phenols in the individual tar fractions (Table 4) and the material balance of the naphthalene fraction (Table 5). There are 5 tables.

ASSOCIATION: UKhIN and Makeyevka Coke Oven Works (UKhIN, Makeyevskiy Koksokhimicheskiy Zavod)

AVAILABLE: Library of Congress.  
Card 1/1

BRON, Yakov Abramovich; SATANOVSKIY, Semen Yakovlevich; DMITRIYEV, M.M.  
otv. red.; LEYTES, V.A., otv. red.; BELINA, R.A., red. izd-va; AND-  
REYEV, S.P., tekhn. red.

[Tubular units for distilling coal tar] Trubchatye agregaty dlia  
peregunki kamennougol'noi smoly. Khar'kov, Gos. nauchno-tekhn.  
izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1961. 230 p.  
(MIRA 14:11)

(Coal tar industry--Equipment and supplies)

STEPANENKO, Mariya Aleksandrovna; BRON, Yakov Abramovich; KULAKOV,  
Nikolay Konstantinovich; LEYTES, V.A., otv.red.;  
LIBERMAN, S.S., red.izd-va; ANDREYEV, S.P., tekhn.red.

[Production of pitch coke] Proizvodstvo pekovogo koksa.  
Khar'kov, Gos.nauchno-tekhn.izd-vo lit-ry po cherno i  
tsvetnoi metallurgii, 1961. 311 p. (MIRA 14:7)  
(Coke industry—Equipment and supplies]

BRON, Yakov Abramovich, Prinimal uchastiye MARKUS, G.A.; DMITRIYEVA, M.M., retsenzent; LEYTES, V.A., otv. red.; BELINA, R.A., red. izd-va; ANDREYEV, S.P., tekhn. red.

[Processing of coal tar] Pererabotka kamennougol'noi smoly.  
Moskva, Metallurgizdat, 1963. 271 p. (MIRA 16:5)  
(Coal-tar products)

BHON, Ye., inzh.

Without effect but effective. Izobr.i rats. no.2:4-7 F '60.  
(MIRA 13:8)  
(Electric motors--Technological innovations)

BRON, Ye. A.

Type specific seroagglutination in Flexner's dysentery. Zhur. mikro-  
biol. epid. i immun. no. 3:89 Mr '54. (MLRA 7:4)

1. Iz kafedry detakikh bolezney Dnepropetrovskogo meditsinskogo in-  
stituta. (Dysentery) (Agglutination)

BRON, Ye. A. and CHERNOMORDIK, A. B.

"The Duration and Frequency of Elimination of Dysentery Bacilli by Dysentery Convalescents," by Ye. A. Bron and A. B. Chernomordik, Dnepropetrovsk Institute of Epidemiology, Microbiology, and Hygiene imeni N. F. Gamaleya and the Sanitary-Epidemiology Station, Oktyabryskiy Rayon, Dnepropetrovsk, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, Oct 56, pp 10-11

This work discusses the results of bacteriological investigations of healthy persons and dysentery patients in order to determine the extent of the carrier state among them.

"Observations on the duration of elimination of dysentery bacilli by persons who had recovered from the acute form of dysentery were carried out for one year. Only the data from those persons who had been investigated bacteriologically at least twice were utilized. Among the 529 persons in this category, 305 were adults and 224 were children under 7. Each of them was tested 2-22 times (an average of 5). The results showed that 24 of the adults and 25 of the children, 49 in all (9.3 %), were eliminating dysentery bacilli.

"In investigations of 3,986 clinically healthy persons working in enterprises of the food industry, 15 bacteria-carriers were found (0.4%). In another control group, children being examined before admission to kindergartens and nurseries, of 2,917 examined, 17 (0.6%) were found to be bacteria-carriers. Almost one third of those found to be bacteria-carriers exhibited chronic dysentery symptoms. In a significant part of the bacteria-carriers, the elimination of dysentery bacilli was observed for 6-12 months after cessation of the symptoms of acute dysentery.

"Prolonged bacteria-carrying was noted both in persons who had had Flexner-type dysentery and in those who had had the Newcastle type. Carriers of Newcastle bacilli were encountered three times more frequently among children than among adults... It was difficult to draw conclusions concerning the epidemiological danger of these bacteria-carriers due to the small number of observations made in this regard. However, in 5 out of 21 residences where bacteria-carriers had lived, 7 new cases of dysentery were noted in the course of a year. Therefore, despite the comparatively rarely observed elimination of the pathogen the danger of carriers to persons around them cannot be denied."

Sum 1274



02297-67 EWT(d)/T/EWP(1) LJP(c) BB/GG/GD  
ACC NR: AT6010530

SOURCE CODE: UR/0000/65/000/000/0035/0041

AUTHOR: Andon, F. I.; Brona, I. I.; Voytova, Ye. L.; Kapitonova, Yu. V.

ORG: none

TITLE: A small system for the projection of digital automaton circuits 166

51  
30  
BT 1

SOURCE: AN UkrSSR. Voprosy teoreticheskoy kibernetiki (Problems in theoretical cybernetics). Kiev, Naukova dumka, 1965, 35-41

TOPIC TAGS: digital computer, automaton, circuit design, Boolean algebra

ABSTRACT: The authors discuss the synthesis of logical devices, consisting in the construction of a reliable functional system to satisfy the specific requirements imposed on the device. Almost all the terms and concepts used by the authors are taken from V. M. Glushkov's book (Sintez tsifrovyykh avtomatov. Fizmatgiz, M., 1962). The synthesis problem, as it applies to a specific case, is formulated as follows: on the basis of a prescribed mapping a functional arrangement is constructed having prescribed characteristics. The program system which solves this problem (a small automation system for the projection of digital automaton arrangements) is described in detail. The entire process of device synthesis is divided into the following six stages: 1) testing of the mapping for automaticity; 2) synthesis (in the case of automaton

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ACC NR: AT6010530

mapping) of the flow matrix of the complete abstract automaton according to the mapping; 3) minimization of the abstract automaton; 4) structural synthesis of the abstract automaton with "delay" type elements (coding and derivation of the Boolean functions for excitation and outputs); 5) minimization of the Boolean functions in normal form; and 6) conversion of the Boolean functions to a system of generalized Scheffer stroke writing and construction of the functional arrangement. Algorithms are described for each synthesis stage.

SUB CODE: 09/ SUBM DATE: 27Aug65/ ORIG REF: 005/ OTH REF: 001

Card 2/2 vmb

BRONCOVA, O.; BYDZOVSKY, V.

Effect of some 5-aryl-pyrimidines on influenza, vaccinia and Newcastle disease viruses. Cesk. epidem. 11 no.3:179-188 My '62.

1. Vyzkumny ustav pro farmacii a biochemii, Praha.

(PYRIMIDINES pharmacol)  
(INFLUENZA VIRUSES pharmacol)  
(VACCINIA virol)  
(NEWCASTLE DISEASE virol)

BYDZOVSKY, V.; BRONCOVA, O.

Disinfectant effect of quaternary salts on viruses in vitro.  
I. Comparison of the disinfectant effect of Ajatin, Septonex,  
VUFB-3555 and Bradosol on A PR-8 influenza virus. Cesk. epidem.  
13 no.3:165-174 My'64

1. Vyzkumny ustav pro farmacii a biochemii, Praha.