

Begin

REEL # 229

Kislyuk, N.

MOSKALENKO, S.I.; GABOVICH, M.S.; BACHINSKIY, Yu.V.; TOMILIN, A.V.;
MEDVEDEV, P.M.; LOMANOVA, M.M.; COLOVKOV, P.D.; GAYDUKOV, G.I.;
ALEYNIKOV, V.V.; STANIN, M.D.; MIROMOVA, V.V.; BELAVINTSEVA,
Ye.S.; TSVETSINSKIY, S.V.; KECHEPURNYI, P.; KOBZAR', M.X.;
BOZHKOVA, Ye.S.; PHELYMINSKIY, V.H.; GORDYCHUK, V.K.; SEMERIGO,
V.F.; KISLYUK, M.

Fifty years in the sugar industry. Sakh.prom. 33 no.2:18
P '59. (MIRA 12:3)

(Shtepan, Georgii Viacheslavovich, 1888-)

KISLYUK, S.V., inventor.

One-process hose knitting method using imitation latex on two-system automatic hosiery machines. Leg. prom. 17 no. 5:35-37 My '57.
(Knitting machines) (Hosiery industry) (MISA 10:16)

BROVMAN, M.Ya.; VYDRIN, V.N.; YERMKHIN, F.K.; KISLYUK, V.A.; KRAYNOV, V.I.;
LEVINTOV, S.D.; RIMEN, V.Kh.; SREBRYAKOV, A.N.; SHEYDER, B.E.

Method of controlling the tension in continuous rilling mills.
Stal' 25 no.7:629-631 J1 '65. (MIRA 18:7)

L 3422-66. EMT(1) OS/GW

ACCESSION NR: AT5023743

UR/0000/65/000/000/0040/0049

AUTHOR: Gavrilov, I. V.; Duma, A. S.; Kisluk, V. S.; Kur'yanova, A. II.

TITLE: Selenocentric coordinates of 160 base points on the lunar surface 12.55

SOURCE: AN UkrSSR. Figura i dvizheniye Luny (Shape and motion of the Moon). Kiev, Naukova dumka, 1965, 40-49

TOPIC TAGS: lunar surface, moon, selenography

ABSTRACT: Measurements of the space coordinates of craters contained in the Schrutka-Rechtenstamm catalog (Schrutka-Rechtenstamm, G., Mitteilungen der Universitätssternwarte, Wien, 1958, 9, 17, 251-303) were made at the CAO AN Ukr. SSR. The results, together with the data of Schrutka-Rechtenstamm and R. B. Baldwin (Baldwin, R. B., The Measure of the Moon. University of Chicago Press, Chicago, 1963), served as the basis for the cumulative catalog of space coordinates of 160 base points presented in the article. Initial results of a solution of a concrete selenodesic problem are presented, and their accuracy is discussed. Calculations show that the center of mass of the moon is located somewhat to the northeast of the accepted center of figure. "In conclusion, the authors thank N. A. Vasilenko and calculators L. N. Zimina and S. A. Zaslavskaya

Card 1/2

L 3422-66

ACCESSION NR: AT5023743

for assistance in the computations." Orig. art. has: 4 figures, 4 tables, and 5 formulas.

ASSOCIATION: None

SUBMITTED: 12May65

ENCL: 00

SUB CODE: AA

NO REF SOV: 001

OTHER: 003

Card 2/2 *MLA.*

KISLYUKHIN, V..

Rural hydroelectric power station built of precast reinforced concrete.
Sel'. stroi. 13 no.6:15 Je '58. (MIRA 11:6)

1. Starshiy inzhener Kirovskogo tresta "Sel'elektrostroy."
(Kirov Province--Hydroelectric power stations)
(Precast concrete construction)

KISLYY, A., nauchnyy sotrudnik

Yellow pear scale insect *Quadraspidiotus pyri*. Zashch. rast. ot
vred. i bol. 10 no.6:31-32 '65. (MIRA 18:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut vinodeliya i
vinogradarstva "Magarach", Yalta.

KISLYY, A.A., *inzh.*

Splicing of rail lengths for curved sections. Put' i put.khoz.
9 no.6:39-41 '85. (MIRA 1816)

1. Putevaya mashinnaya stantsiya No.121, stantsiya Zhulyany,
Yugo-Zapadnoy dorogi.

MANYCH, A.D., inzhener-mekhanik; NOVOMIRSKIY, S.P., inzhener-mekhanik; DENISENKO, I.P., brigadir; SHECHERBINSKIY, A.V., kombayner, Geroz setisialisticheskogo truda; ~~KISLYY, A.P.~~ kombayner, Geroz setisialisticheskogo truda; VASIL'CHENKO, O.A., Geroz setisialisticheskogo truda; BUTENKO, V.I.; POLUYAN, V., kombayner.

Please think about it. Znan. sila 32 no.1:6-7 Ja '57. (MIRA 10:4)

1. Direktor Azevskoy ordena Lenina Mashinno-trakternoy stantsii (for Manych).
 2. Zamestitel' direktora Azevskogo uchilishcha mekhanizatsii sel'skogo khozyaystva. No.2. (for Novomirskiy).
 3. 10-ya traktornaya brigada Azevskoy ordena Lenina Mashinno-trakternoy stantsii (for Denisenko).
 4. Azevskaya Mashinno-trakternaya stantsiya (for Shecherbinskiy, Kislyy, Vasil'chenko).
 5. Master proizvodstvennogo obucheniya Azevskogo industrial'nogo tekhnika trudevykh rezervov (for Butenko).
 6. Uchashchiysya gruppy perepodgotovki brigadirov trakternykh brigad Azevskogo uchilishcha mekhanizatsii sel'skogo khozyaystva, Samarskoy Mashinno-trakternoy stantsii (for Poluyan).
- (Combines (Agricultural machinery))

KISLIY, A.V., aspirant

Methods for estimating the effectiveness of insecticides. Zashch.
rast. ot vred. i bol. 8 no.5:46 My '63. (MIRA 16:9)

1. Nikitskiy botanicheskiy sad, Yalta.
(Insecticides—Testing)

TIKHONOVA, N.A.; KISLYY, A.V., mladshiy nauchnyy sotrudnik

Effective method for controlling granary pests. Zashch. rast.
ot vred. i bol. 4 no.2:26 Mr-Apr '59. (MIRA 16:5)

1. Zaveduyushchiy otdelom zashchity rasteniy Krymskoy oblastnoy
gosudarstvennoy sel'skokhozyaystvennoy opytnoy stantsii (for
Tikhonova).

(Crimea--Granaries--Disinfection)

KISLYY, G., mladshiy nauchnyy sotrudnik

Specific manifestations of loose smut. Zashch. rast. ot vred.
i bol. 10 no.3:40 '65. (MIRA 19:1)

1. Ukrainskiy institut rasteniyevodstva, selektsii i genetiki,
Khar'kov.

KISLYY, I., kand.tekhn.nauk (g.Kiyev)

Mapping underground municipal communications, water-supply and sewer
systems. Zhil.-kon. khoz. 10 no.11;3 '60. (MIRA 13:11)

(Map drawing)

(Underground construction)

(Ukraine—Municipal services)

KISLYUK, I.M.

Notes on the anatomy of wood in Araucariaceae. Bot.zhur.
44 no.11:1624-1631 N '59. (MIRA 13:4)

1. Leningradskiy gosudarstvennyy ordena Lenina universitet
im. A.A.Zhdanova.
(Araucariaceae) (Wood--Anatomy)

KISLYY, I. M.

KISLYY, I. M.: "Morphographic-morphometric characteristics of the earth's surface in the Ukraine near the Sea of Azov." Min Higher Education Ukrainian SSR. Khar'kov Order of Labor Red Banner Agricultural Institute V. V. Dokuchayev. Chair of Geodesy. Khar'kov, 1956. (Dissertation for the Degree of Candidate in Technical Science).

Source: Knizhnaya letopis' No. 28 1956 Moscow

KISLYY, I.M., kand. tekhn. nauk

Conference on the coordination of research in the field of
geodetic engineering in the Ukrainian S.S.R. Izv. vys. ucheb.
zav.; geod. i aerof. no. 5: 179-180 '58. (MIRA 11:12)
(Ukraine--Geodesy)

KISLYY, I.M. [Kyslyi, I.M.]

Morphometrical characteristics of the surface of the Azov region
of the Ukraine. Dop. AN URSR no.6:669-670 '58. (MIRA 11:9)

1. Nauchno-issledovatel'skiy institut gorodskogo stroitel'stva akademii
stroitel'stva i arkhitektury USSR. Predstavil akademik AN USSR V.G.
Bondarchuk [V.H. Bondarchuk].
(Azov region--Topography)

AUTHOR: Kislyy, I.M., Candidate of Technical Sciences (Kiyev) 26-58-5-39/57
TITLE: The fast of the Lysogor River (Proshloye reki Lysogor)
PERIODICAL: Priroda, 1958,⁴⁷ Nr 5, pp 112 - 113 (USSR)
ABSTRACT: A short report is given on conditions of the Lysogor River of the Ukraine, Chernigov Oblast'.
AVAILABLE: Library of Congress
Card 1/1 1. Lysogor River - History

22(1)

30V/3-59-3-35/48

AUTHOR: Kislyy, I.M. Candidate of Technical Sciences

TITLE: Coordination of Research in the Field of Engineering Geodesy in the UkrSSR (Koordinatsiya issledovaniy v oblasti inzhenernoy geodezii v USSR)

PERIODICAL: Vestnik vysshey shkoly, 1959, Nr 3, p 70 (USSR)

ABSTRACT: The basic problem of the First Republican Conference on Questions of Engineering Geodesy that took place in Kiyev was to coordinate the research work conducted in the Ukraine. Over 300 specialists from scientific-research institutes and vuzes, design and production organizations of the Ukraine and the RSFSR participated in discussing these problems. Engineering geodesy is, first of all, geodesy in the building trade. The reports delivered by A.M. Kas'yanov, Director of the Nauchno-issledovatel'skiy institut gradostroitel'stva i arkhitektury USSR (Academy of Building and Architecture UkrSSR) and Corresponding Member of the Academy, and by Doctor of Technical Sciences, Fro-

Card 1/4

SOV/3-59-3-35/48

Coordination of Research in the Field of Engineering Geodesy in the UkrSSR

fessor N.G. Viduyev (of the same institute) - "The Present State and Problems of Scientific Research in the Field of Engineering Geodesy" were the most important of the Conference. Over 20 persons delivered reports to the Conference. These reports were delivered by Docent V.Yu. Moiseyev (Kiyevskiy inzhenerno-stroitel'nyy institut - Kiyev Engineering and Construction Institute) on "Application of New Engineering Methods in Surveying and Examining Underground Constructions", Engineer G.D. Onar (Kiyevmetrostroy) - "Geodetic Surveying Work at Building Sites of Tunnels and Subways", Engineer M.A. Brozin (Kiyevmetrostroy) - "Geodetic Work in Bridgebuilding", Professor V.G. Leontovich (Kiyevskiy khudozhestvennyy institut - Kiyev Institute of Art) - "Instruments, Required for Carrying Out Work in Engineering Geodesy", and others. The orators welcomed the opening of a Department for Engineering Geodesy at the Kiyev Engineering and Construction Institute, and the establishing of a

Card 2/4

30V/3-59-3-35/48

Coordination of Research in the Field of Engineering Geodesy in the UkrSSR

Section of Engineering Geodesy at the UkrSSR Academy of Building and Architecture. The conference resolution indicated the basic problems of engineering geodesy science for the next 7 years. These include: solving problems of geodetic electronics, of engineering-geodetic planning and its theory, the theory of engineering geodesy, and taking of large-scale aerial photographs. It is intended to make devices for range finding, for town geodetic work, geodetic observations of deformations in constructions, geodetic work at building sites, for hydrotechnical construction, road construction, and for underground communication surveys. The conference material will be published in a special collection by the Academy of Building and Architecture of the UkrSSR.

Card 3/4

SOV/3-59-3-35/48

Coordination of Research in the Field of Engineering Geodesy in the UkrSSR

ASSOCIATION: Nauchno-issledovatel'skiy institut gradostroitel'stva Akademii stroitel'stva i arkhitektury USSR (Scientific Institute of Town Building of the UkrSSR Academy of Building and Architecture).

Card 4/4

3(4)

SOV/154-59-3-14/19

AUTHOR:

Kislyy, I. M., Candidate of Technical Sciences

TITLE:

Results of the Work of the Scientific-technical Seminar for the Leading Workers in the Field of Applied Geodesy for 1957-1958 and the Plans for 1958 - 1959 (Itogi raboty nauchnogo tekhnicheskogo seminaru rukovodyashchikh rabotnikov v oblasti inzhenernoy geodezii za 1957 - 58 g. i plan raboty na 1958-59 g.)

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotogrammetriya, 1959, Nr 3, p 143 (USSR)

ABSTRACT:

The scientific-technical seminar for leading workers in the field of applied geodesy was organized by the Chair of Geodesy of the Kiyevskiy inzhenerno-stroitel'nyy institut (Kiev Civil Engineering Institute), by the Department of Applied Geodesy of the Nauchno-issledovatel'skiy institut gradostroitel'stva Akademii stroitel'stva i arkhitektury Ukrainskoy SSR (Scientific Research Institute of Town-building of the Academy of Building Engineering and Architecture of the UkrSSR), and finally, by the KO VAGO. The seminar is already in its second year. Its aims are: Betterment of qualifications, exchange of experience made in production, advice on operations of applied geodesy. The following

Card 1/3

Results of the Work of the Scientific-technical Seminar SGV/154-59-3-14/19
for the Leading Workers in the Field of Applied Geodesy for 1957-1958 and
the Plans for 1958-1959

participate in the seminar: Ukrainskoye aerogeodezicheskoye
predpriyatiye (Ukraine Aerogeodetical Enterprise), Geotopos "yemka,
VTI2, Glavkiyevstroy, Ukgiprosakht, Ukgiprosakhar, Gipro-
zdrav, Ukgiprokaz, Kiyevgiprotrans, Giprorechtrans, etc. .
Following suggestions made by these organizations, the following
problems were dealt with in the seminar: large-scale aerial
photography of cities (Giprograd); electronic methods in the
surveying of subterranean constructions (Ukrsantekhmontazh);
new methods of pegging in industrial and civil constructions
'Promstroyproyekt, Glavkiyevstroy); application of light locating
(vetolokatsiya) in surveying (Giprotechtrans); principles of
radiogeodesy (Ukrgeologiya); new geodetic instruments and
apparatus; application of hygroscopic instruments for the orien-
tation of subterranean production (Kiyevmetrostroy); application
of aerial photography and of the echo sounder in hydrographic
operations (Glavnoye "pravleniye Dneprovskogo rechnogo parakhod-
stva - Main Administration of the Dnepr River Navigation);
municipal geodetic frame networks (Geotopos "yemka); practice of
radiogeodetic surveying (Ukrneftegeofizika). . From September

Card 2/3

Results of the Work of the Scientific-technical Seminar SOV/154-59-3-14/19
for the Leading Workers in the Field of Applied Geodesy for 1957-1958 and
the Plans for 1958-1959

1957 to May 1958 the seminar was regularly held twice a month. 20 lectures were delivered; from 70 to 300 persons were assembled each time. The following lectures were heard in the course of the new year: A. M. Golyshev, head of the department of state geodetic supervision of the MVD USSR (Ministry of Internal Affairs of the UkrSSR) "Survey of Geodetic Works of the Official Organizations of the Ukrainskaya SSR"; Professor N. G. Viduyev, Doctor of Technical Sciences, "The Present State of the Error Theory in Geodetic Measurements"; Professor N. I. Tovstoles, Doctor of Technical Sciences, "Experimental Aerial Photography for the Technical Investigation of Auto-highways". Twenty more lectures are provided.

ASSOCIATION: Nauchno-issledovatel'skiy institut gradostroitel'stva AS 1 A Ukrainskoy SSR (Scientific Research Institute for City Building of the Academy of Building Engineering and Architecture of the Ukrainskaya SSR)

Card 3/3

KISLYY, I.M., kand.tekhn.nauk

Leveling rods manufactured by the Kalinin Economic Council. Geod.
1 kart. no.1:76 Ja '60. (MIRA 13:6)
(Surveying--Instruments)

KISLYY, I.M.

Slopes and elevations of drainage basins in the northern part of
the region of the Sea of Azov. Sbor. rab. po gidrol. no.2:144-
146 '61. (MIRA 15:2)

1. Nauchno-issledovatel'skiy institut gradostroitel'stva Akademii
stroitel'stva i arkhitektury USSR.
(Azov Sea region--Valleys)

KISLYY, I.M. [Kyslyi, I.M.]

Studying the influence of the scale of a topographic map upon
the accuracy of determining morphometrical indices. Geog. zbir.
no.6:152-156 '62. (MIRA 15:9)

(Topographic maps)

18(7)

SOV/21-59-1-12/26

AUTHORS: Samsonov, G.V. and Kislyy, P.S.

TITLE: A New Method of Making Pipes and Rods of Heat-Resistant Powder Metals and Their Compounds (Novyy sposob izgotovleniya trub i sterzhney iz poroshkov tugoplavkikh metallov i ikh soyedineniy)

PERIODICAL: Dopovidi Akademii nauk Ukrainy'koi RSR, 1959, Nr 1, pp 46-48 (USSR)

ABSTRACT: This new method of making pipes or solid (without hole) bodies of heat-resistant and non-plastic metal powders or their compounds such as carbides, nitrides, borides, silicides, or sulfides, consists in pressing them in a mold, with the use of a punch with a central rod (for making pipes) or without such a central rod (for making solid bodies). The metal powder is mixed with 2-4% starch paste, which is the best plasticizer for this purpose. The pressed bodies are sintered

Card 1/2

SOV/21-59-1-12/26

A New Method of Making Pipes and Rods of Heat-Resistant Powder Metals and Their Compounds

in an electric resistance oven at 600-700° C, for 1/2 hour, and are then heated to a clinkering temperature for 5-10 hours, whereupon the furnace and works are cooled gradually to 900-1000° C. Shrinkage averages 12-20%. Porosity changes from 5 to 12%. There are 1 diagram and 5 Soviet references.

ASSOCIATION: Institut metallokeramiki i spetssplovov AN UkrSSR (Institute of Metal-Ceramics and Special Alloys of AS Ukr SSR).

PRESENTED: September 27, 1958, by V.N. Svechaikov, Member of the AS UkrSSR

Card 2/2

15 (2), 15 (6)

AUTHORS: Meshpor, V. S., Kislyy, P. S.

SOI/131-59-5-9/12

TITLE: Hot Pressing of Chromic Boride Powder and Some Properties of the Sintered Material (Goryacheye pressovaniye poroshka borida khroma i nekotoryye svoystva spechennogo materiala)

PERIODICAL: Ogneupory, 1959, Nr 5, pp 231-236 (USSR)

ABSTRACT: In the present paper, the authors investigate the sintering conditions of the chromic boride powder which is obtained by the reaction of chromic oxide and boron carbide. The chemical composition of chromic boride is given in table 1. The sintering of the chromic boride powder was done by hot pressing by means of a laboratory lever press (Fig 1). At a temperature of $2000 \pm 50^\circ$, a pressing effect of 100 kg/cm^2 and a sintering time of 10-12 min, it was possible to obtain samples with the minimum porosity of 3% (Fig 2). The melting temperature of the CrB_2 ascertained by the authors is $2200 \pm 50^\circ$ which comes near the temperature ascertained by Markovskiy (Ref 3). Figure 3 shows the relative change in weight at 1200° of the CrB_2 samples related to 1 cm^2 surface

Card 1/3

Hot Pressing of Chromic Boride Powder and Some
Properties of the Sintered Material

SOV/131-59-5-9/12

and figure 1 represents the curve of the change in weight. This change in weight is a function of the time of oxidation. The oxidation stability of the borides ascertained by Kotel'nikov (Ref 11) corresponds to the one in the present paper. The coefficients of expansion of three samples with different porosities at 500°, as well as the resistance to pressure and rupture of chromic boride samples with different porosities, are further indicated. Some properties of the chromic boride are given in table 2. Concerning the stability of the chromic boride against the action of active reagents, the authors of this article refer to the papers by Kotel'nikov (Ref 14) and Wodylevskaya (Ref 22). The indicated properties of the chromic boride permit its use as a constituent of heat-resistant alloys. A shortcoming is its brittleness which can be reduced by cementing the boride grains with a metal binding agent. The cemented chromic boride can be used for the manufacture of nozzles for spraying fused metals, of crucibles and coats of thermo-elements for the temperature measurement in metallurgical furnaces. There are 1 figures, 2 tables, and 29 references,

Card 2/3

Hot Pressing of Chromic Boride Powder and Some
Properties of the Sintered Material

307/131-59-5-9/12

17 of which are Soviet.

ASSOCIATION: Institut metallokeramiki i smetnial'nykh splavov AN USSR
(Institute of Powder Metallurgy and Special Alloys of the
AS UkrSSR)

Card 3/3

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67839

SOV/180-59-6-20/31

AUTHORS: Kislyy, P.S., and Samsonov, G.V. (Kiyev)TITLE: High-Temperature Semiconductor Thermocouples ✓PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 6, pp 133-137 (USSR)

ABSTRACT: The authors classify service conditions for high-temperature thermocouples and discuss suitable materials with a view to extending the present range of temperature and composition conditions. They give e.m.f. vs temperature curves (Fig 1) for the following alloys (mol %): 20 MoSi₂ + 80 B₄C; 20 TiC + 80 CrSi₂; 20 TiC + 80 B₄C. The highest e.m.f. is obtained with systems of titanium or zirconium borides with boron carbide, the temperature dependence of which is linear above 300 °C, and these systems are stable. The authors propose a thermocouple design in which molybdenum silicide or titanium or zirconium boride or carbide or similar material forms the sheath. The sheath at the same time is one electrode of the couple, the other being a rod of e.g. boron carbide located inside the sheath. The junction is formed at the tip of the sheath by welding. Fig 3 shows the calibration curves for

 ✓Card
1/3

67838

SCV/180-59-6-20/31

High-Temperature Semiconductor Thermocouples

TiB₂ - B - C; ZrB₂ - B - C; MoSi₂ - B - C. Leads are attached either by soldering to a silver-paste deposit or with the aid of copper clips. Laboratory tests of couples for 150 hours at 1600 °C showed their stability to equal that of platinum/platinum-rhodium couples tested at 1200°C but under otherwise similar conditions; production tests were carried out at the Alchevskiy metallurgicheskii zavod imeni Voroshilova (Alchevsk metallurgical works im.

Voroshilov); measuring open-hearth furnace waste-gas temperature showed their suitability for temperatures of 1800-1900°C under oxidizing conditions. The authors maintain that by suitable choice of materials a very wide range of requirements can be covered. For example a series of couples of borided graphite with borides are suitable for vacuum, inert or reducing atmospheres up to 2200-2300 °C, the e.m.f. rising linearly up to 90-120 mV from 5-6 at 300-400 °C. There are 3 figures and 16 references, of which 13 are Soviet, 2 German and 1 is English. ✓

Card
2/3

67838

SOV/180-59-6-20/31

High-Temperature Semiconductor Thermocouples

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov
AN USSR, Kiyev
(Institute of Metallo-Ceramics and Special Alloys,
Academy of Sciences, Ukr. SSR, Kiyev)

SUBMITTED: June 29, 1959

Card 3/3

15(2)

AUTHORS:

Samsonov, G. V., Kislyy, P. S.

SOV/131-59-6-9/15

TITLE:

Technology of Producing Tubes and Rods of Molybdenum Disilicide (Tekhnologiya izgotovleniya trub i stержней iz disilitsida molibdena)

PERIODICAL:

Ogneupory, 1959, Nr 6, pp 276-278 (USSR)

ABSTRACT:

For the production of tubes and rods of MoSi_2 a mold is used in which the mass is pressed through a nozzle, as is shown in figure 1. The unworked tubes and rods were dried for 1 - 2 days at room temperature and then sintered in Tamman furnaces in a hydrogen medium. In doing so, the unworked pieces were at first heated up to a temperature of 600 - 700°, halting time 30 minutes, and then the sintering process was finished at a temperature of 1950°, halting time 5 - 10 minutes. After that the products together with the furnace were cooled down to 900 - 1000°. A deficiency is the high electrical conductivity of the heating elements made of molybdenum disilicide. Experiments introducing silicon-aluminum- and zirconium oxide in the layer were made to

Card 1/2

Technology of Producing Tubes and Rods of Molybdenum Disilicide SCV/131-59-6-9/15

increase the electric resistance. Tubules of molybdenum disilicide can be used for the production of electrodes for semi-conductor thermocouples. V. S. Sinel'nikova took part in this work (footnote 1). Figure 3 shows the characteristics of such a thermocouple. There are 3 figures, 1 table, and 4 Soviet references.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR
(Institute of Powder Metallurgy and Special Alloys of the AS UkrSSR)

Card 2/2

18 (

SOV/21-59-8-12/26

AUTHOR:

Samsonov, H.V., Synel'nykova, V.S., Kyslyi, P. O.
(Samsonov, G. V., Sinsel'nikova, V. S., Kyslyi, P. S.)

TITLE:

Alloys of the Boron Carbide - Molybdenum Disilicide System

PERIODICAL:

Dopovidi Akademii nauk Ukrain's'koï RSR, 1959, Nr 8,
pp 866 - 868 (USSR)

ABSTRACT:

The alloys of boron carbide with molybdenum disilicide possess a high and stable thermal e. m. f. which is used when creating high-temperature thermocouples [Ref. 1]. The boron carbide, however, is, at its high resistance to heat, [Ref. 2] not yet sufficiently resistant to oxidation at high temperatures. This calls forth the necessity to add components to the alloy which avert or stop its oxidation. In connection with this, the properties of boron carbide - molybdenum disilicide alloys were subjected to investigations based upon the method of metallography, X-ray patterns, conductivity and thermal e. m. f. Formation of the quadripartite phase $Mo(B_4C_3, Si)$ is found. It has a very wide homogeneous region across which (from 10 to 50 mol.% $MoSi_2$ in alloys with boron carbide) electrical resistance

Card 1/2

SOV/21-59-8-12/26

Alloys of the Boron Carbide - Molybdenum Disilicide System

increases and thermal e. m. f. decreases, in accordance with the degree of defectiveness of the lattice of this phase. The investigation of alloys in view of their resistance to oxidation has shown (Photo 2), that an alloy which according to its composition corresponds approximately to the quadripartite chemical compound, possesses the highest resistance to oxidation. Additions of disilicide of less than 50 mol.% decrease the resistance of alloys to oxidation. There is one set of photos, 1 diagram and 5 references, 3 of which are Soviet, 1 American and 1 German.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR
(Institute of Powder Metallurgy and Special Alloys of the AS of UkrSSR)

PERIODICAL: By V. M. Svechnikov, Member of AS UkrSSR

SUBMITTED: December 22, 1958

Card 2/2

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S/181/60/002/008/007/045
B006/B070

24.7500

AUTHORS: Kislly, P. S., Samsonov, G. V.

TITLE: The Diffusion of Boron in Carbon

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1729-1732

TEXT: The authors have already performed preliminary experiments on the diffusion of boron in graphite and investigations of the properties of the boron carbide obtained in this way. It is found that by the diffusion of boron in graphite alloys are obtained which show greater solidity and lower brittleness than boron carbide obtained by compression under heat. These alloys have semiconductor properties, and can be utilized for the preparation of high temperature thermocouples. By the diffusion of boron into the surface of graphite samples, their corrosion resistance becomes noticeably higher, particularly at higher temperatures (Refs. 1-5). The purpose of the present work was to investigate the mechanism of diffusion and to determine its parameters. The object investigated was a cylindrical sample of spectroscopically pure graphite

Card 1/3

82988

The Diffusion of Boron in Carbon

S/181/60/002/008/007/045
B006/BC-70

onto whose surface a 2 mm thick layer of a paste of amorphous boron was applied. After the samples had been dried at 150°C, they were enclosed in a graphite shell and preheated in an atmosphere of hydrogen (700 - 800°C, 60 - 80 min). After this treatment the samples were subjected to metallographic, chemical, and X-ray analyses. Further, the reverse process of diffusion of carbon in boron was investigated. For this purpose, boron samples of a porosity of 36% were employed. They were prepared by compression of boron powder and sintering at 1900°C. In this case there resulted a saturation of the carbon samples with carbon in 30 minutes in a vacuum oven at 1940°C. Experiments showed that in similar conditions the boron penetrates deeper in carbon (1.4 - 1.6 mm) than carbon does in boron (0.6 - 0.8 mm). This indicates a remarkably higher mobility of boron atoms. The diffusion coefficients were calculated to be $6.2 \cdot 10^{-6} \text{ cm}^2/\text{sec}$ (B→C) and $1.8 \cdot 10^{-6} \text{ cm}^2/\text{sec}$ (C→B). Numerical data for two samples showing boron content at different depths of the carbon sample (chemical analysis) are given in Table 1. Their graphical representation is given in Fig. 2. The boron concentration diminishes exponentially with depth. That a solid solution is formed due to

Card 2/3

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The Diffusion of Boron in Carbon

S/181/60/002/008/007/045
B006/BC70

diffusion, is shown by an X-ray analysis. Here the interplanar spacings of graphite lattice are measured as function of boron concentration (Fig. 3). Further, the temperature dependence of diffusion of boron in graphite is investigated (Fig. 4). $D = 3.02 \exp(-28625/T)$ is found to hold. Numerical values are given in Table 2. There are 4 figures, 2 tables, and 6 Soviet references.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR
(Institute of Powder Metallurgy and Special Alloys of the
AS UkrSSR)

SUBMITTED: October 20, 1959

Card 3/3

89971

S/131/51/000/002/001/002

B 105/3206

15 2220 1273 1043

AUTHORS: Samsonov, G. V., Kislyy, P. S., Panasyuk, A. D.,
Strel'chenko, A. G., Khavrunyak, I. G., Serikova, G. N.

TITLE: Shield tubes from zirconium boride for immersion
thermocouples

PERIODICAL: Ogneupory, no. 2, 1961, 72-74

TEXT: The article describes experiments and studies leading to the manufacture of shield tubes from zirconium boride which have a high thermal resistivity. Shield tubes produced from zirconium dioxide, which withstand immersion into molten steel at 1650-1720°C for a short time, were elaborated at the Leningradskiy tekhnologicheskii institut imeni Lenseveta (Leningrad Technological Institute imeni Lenseveta). Studies of their stability in molten cast iron and steel, made at the laboratoriya tugoplavkikh materialov (Laboratory for High-melting Materials) of the Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR), showed that zirconium boride ZrB_2 is of extremely high thermal resistivity and thus well suited

Card 1/14

89972

Shield tubes from zirconium boride ...

S/151/61/000/002/001/002
B105/B206

for shield tubes of thermocouples. Such a shield tube is schematically shown in Fig. 1. The blanks of the shield tube are dried and sintered in an electric furnace at a temperature of 2050-2200°C. The sintered shield tubes have a fine-grained fracture and a porosity of 5-12%. Shield tubes with an outer diameter of 11 and 16 mm and an inner diameter 4 and 11 mm were made. They were tested at the following metallurgical plants: zavod "Zaporozhstal'" ("Zaporozhstal'" Plant), zavod im. Dzerzhinskogo (Plant imeni Dzerzhinskiy), Alchevskiy zavod (Alchevskiy Plant), as well as the Kiev plants: zavod "Bol'shevik" ("Bol'shevik" Plant) and zavod "Leninskaya kuznitsa" ("Leninskaya kuznitsa" Plant). When testing the shield tubes in molten cast iron at 1400 to 1450°C in a Kryptol furnace, it was found that they are only slightly covered by slag and not corroded, and that they maintain their initial structure. When tested during tapping of cast iron in a blast furnace, they withstand 15 tappings with a total stay of 10 hr 53 min in molten metal. In an open hearth furnace with basic lining, shield tubes are corroded by basic slags and destroyed after 30-40 min. The outer diameter of the shield tubes is not reduced during immersion in molten steel and a stay of

Card 2/5

1971

Shield tubes from zirconium boride ...

S/131/61/000/002/001/002
B105/B206

40 45 min. In small open-hearth furnaces, shield tubes withstood the total melting time (2 hr) without any damage. Their thermal resistivity is determined by the number of immersions into the tank of the open-hearth furnace and is at least 15 to 20 immersions, permitting the temperature of the steel to be regulated during the entire heating-up period. At the Kiyevskiy armaturno-mekhanicheskiy zavod (Kiyev Plant for Fittings and Mechanical Equipment), zirconium boride shield tubes withstood 86 hr in molten brass at $850 \pm 50^\circ\text{C}$ without any damage. At the "Leninskaya kuznitsa" Plant, the same results were obtained during a test in molten bronze of the type AMU₁-10-2 (AMTs-10-2). Besides the authors, A. G. Petrenko, Ya. S. Gayvoronskiy, N. M. Tenishev, V. G. Tishchenko, I. R. Krichker, G. G. Besspalyy, G. A. Yasinskaya, as well as collaborators of the plants mentioned participated in this study. Shield tubes from silicon nitride (Si_3N_4) also show high stability in molten brass at 850°C . The high stability of zirconium boride shield tubes in molten steels and cast iron makes it possible to use them in tanks of open-hearth furnaces, blast-furnace channels, and steel ladles. Zirconium boride shield tubes showed high stability in molten bronzes and brass. Continuous temperature measurement of metals in melting furnaces can be

Card 3/5

8997L

Shield tubes from zirconium boride ...

S/131/61/000/002/001/002
B105/B206

made with their aid. There are 3 figures and 6 Soviet-bloc references.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR
(Institute of Powder Metallurgy and Special Alloys AS
UkrSSR) Samsonov, G. V., Kislyy, P. S., Panasyuk, A. D.;
Institut avtomatiki Gosplana USSR (Institute of Automation
of the Gosplan of the UkrSSR) Strel'chenko, A. G.,
Khavrunyak, I. G., Serikova, G. N.

X

Card 4/5

KISLYY, P.S.; LAKH, V.I.; SAMSONOV, G.V.; STADNYK, B.I.; KHARENKO, R.P.;
CHEKHOVICH, A.B.

Thermoelectric characteristics of high-temperature thermocouples
with refractory electrodes. Izv.tekh. no.5:21-23 My '61.

(MIRA 14:5)

(Thermocouples)

30316

S/115/61/000/010/005/005
2073/E555

245500

AUTHORS: Samsonov, G. V., Kozlov, P. S. and Panasyuk, A. D.

TITLE: Thermoelectric properties of thermocouples with high melting point solid electrodes

PERIODICAL: Izmeritel'naya tekhnika, no 10, 1961, 32-34

TEXT: ZrC and ZrB₂ have the favourable combination of high strength, low electric resistance, good thermal conductivity, moderate coefficients of thermal expansion and a high resistance against the effect of aggressive media, including molten metals and slags. The authors describe the results of investigations of the thermoelectric properties of thermocouples with electrodes made of these materials. The following electrode compositions were used: 1) virtually stoichiometric ZrB₂ with a free carbon admixture of approximately 0.4%; 2) ZrC containing 85.1% Zr, 12.8% C total (1.62% free C), and 0.05% Fe; and 3) ZrC of the same composition as above after separation of the free carbon by means of a 2% soap solution. From these materials thermoelectrode specimens were prepared and coupled with platinum. Their thermal e.m.f. was determined after treatment for 10 and 20 hours at high

Card 1/2

Thermoelectric properties of ...

30316
S/115/61/000/010/005/005
E073/E555

temperatures in H_2 and $CO + H_2$ media. The presence of free carbon sharply affects the stability of the thermal e.m.f. of ZrC. Determination of the variation with temperature of the thermal e.m.f. of ZrH_2 and ZrC showed that in a thermocouple with ZrC or ZrH_2 electrodes a virtually linear relationship exists between temperature and thermal e.m.f. ($\sim 8.7 \mu V/^\circ C$). Thermocouples based on these materials have only slight thermal e.m.f. fluctuations. The thermocouple was calibrated against another thermocouple in the temperature range 20 to $1200^\circ C$ and by means of an optical pyrometer in the temperature range 800 to $2000^\circ C$. A graphite heater of a design which is illustrated in the paper was used; this enabled calibration up to $3000^\circ C$. The stability of the calibration curve was checked by holding the thermocouple at $1800^\circ C$ in a hydrogen atmosphere. Subsequent re-calibration at 500, 1000, 1500 and $2000^\circ C$ showed that at $2000^\circ C$ the change did not exceed $25^\circ C$, i.e., it was of the order of 1%. There are 4 figures, 2 tables and 6 references: 5 Soviet and 1 non-Soviet.

Card 2/2

LAKH, V.I.; PROKHORENKO, V.Ya.; TEREBUKH, L.S.; KISLIY, P.S.; PANASYUK,
A.D.; SAMSONOV, G.V.

Temperature measurement of the atmosphere of an aluminum
electrolysis cell. TSvet. met. 34 no.8:38-40 Ag '61. (MIRA 14:9)
(Aluminum--Electrometallurgy)

S/226/62/000/002/004/010
1003/1203

AUTHOR: Kislyy, P.S., Panasyuk, A. D. and Samsonov, G. V.

TITLE Activated sintering of niobium carbide

PERIODICAL: Poroshkovaya metallurgiya, no. 2 1962, 38-43

TEXT: Niobium carbide is used in construction of high-temperature resistance furnaces and for high temperature thermocouples. Sintering of niobium carbide should be done at temperatures up to 3000°C which are, however, difficult to attain. This work investigates the possibilities of lowering sintering temperatures of niobium carbide powders by activating the sintering process. Since additions of rickel fail to activate the process to any substantial extent, the authors used 270 mesh niobium carbide powder containing 88.5% of Nb and 11% of C with an addition of 1% of Fe and 2% of CoCl₂. Physicochemical properties are given of powders sintered in resistance furnaces at temperatures ranging from 1700 to 2600°C in an atmosphere of hydrogen. Their lower porosity as compared with that of niobium carbide powders sintered without any activating additions is stressed. There are 5 figures and 3 tables.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: June 11, 1961

Card 1/1

S/226/62/000/002/007/010
1003/1203

AUTHOR: Kislyy, P. S.

TITLE: A device for measuring the shrinkage and the electric resistance of powders during the sintering process

PERIODICAL: Poroshkovaya metallurgiya, no. 2 1962, 74-76

TEXT: Because sintering is the last significant stage in the production of metal powders, it requires a process control, such as provided in the present article. This device permits direct measurements of shrinkage and electric resistance which properties reveal any faults in the micro- and macrostructure of the sintered material. The device consists of an original dilatometer of high-grade graphite, which also measures the electric resistance of the sample. It was first calibrated on copper and quartz samples, and a comparative measurement of electric resistance of copper showed that the maximum error of the device is 1.8%. There are 2 figures.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: September 12, 1961

Card 1/1

1.1600

39927

S/226/62/000/003/005/014
1003/1203

AUTHOR Kislyy, P. S. and Samsonov, G. V.

TITLE: Extrusion die-forming of pipes and rods from refractory metal powders

PERIODICAL: Poroshkovaya metallurgiya, no. 3, 1962, 31-48

TEXT The article deals with the problem of extrusion die-forming of mixtures of refractory compounds with plasticizers, outlines the technological process of manufacture by a method never before used for refractory metal powders. The initial conditions of the powders, the method of preparation of the mixtures, initial grain size, the type, amount, and method of introduction of the plasticizer, applied pressure and humidity of the powder and their effects on the properties of the finished products are discussed. There are 15 figures and 2 tables.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: January 4, 1961

Card 1/1

X

5/120/62/000/004/003/012
1003/1203

AUTORS: L'vov, S.M., Melchenko, V.P., Kislyy, P.S., Verkhoglyadova, T.S.
and Kosolapova, T.Ya.

TITLE: Electric properties of borides, carbides, and nitrides of chromium

PERIODICAL: Poroshkovaya metallurgiya, No.4, 1962, 20-25

TEXT: The electric properties of the above compounds have not been sufficiently investigated. In the present work the electric resistivity, the Hall effect, the thermal emf, the thermal coefficient of electric resistivity, and the coefficient of heat conductivity κ of all borides, and nitrides of chromium were investigated at room temperature. The influence of carbon, boron, and nitrogen on the electric properties of their compounds with chromium is in good agreement with the regularities displayed by the borides, carbides, and nitrides of all group IV-VI transition metals. There are 3 figures and 1 table. ✓

ASSOCIATION: Khersonskiy gosudarstvennyy pedagogicheskiy institut im. N.K. Krupskoi i Institut Metallokeramiki i spetsial'nykh splavov AN URSR

~~5/120/62~~

Submitted: Jan 1962

41898

S/226/02/000/004/007/012
1003/1203

9.4/74

Author: Kuziy, P.S.

Title: The prospects for utilizing refractory compounds for the manufacture of high-temperature thermocouples

Periodical: Poroshkovaya Metallurgiya, no. 4, 1962, 50-55

Text: The following thermocouples were prepared: $\text{MoSi}_2/\text{WSi}_2$ for temperature measurements in oxidizing media up to 1700°C , C/ZrB_2 for measurements of the temperature of molten metals, steels and slag and C/TiC for measurements in reducing and in carburizing media at temperatures up to 2500°C . The testing of the above and of the ZrB_2/ZrC thermocouples in various media, showed that their emf changed after 155 hours of testing by values permissible according to technical specifications. The production of metal powder thermocouples with the same emf versus temperature values is rather difficult as these values are strongly influenced by even the smallest changes in the preparation and in the sintering of the metal powder wires. There are 4 figures and 2 tables.

~~Doc 1/2~~ *Inst. Metal Ceramics & Special Alloy, AS Ukr SSR*

KISLIY, P.S.

Sintering of blanks by compacting high-melting compounds in dyes.
Porosh.met. 2 no.5:70-78 3-0 '62. (MIRA 15:11)

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Powder metallurgy)

KISLYY, P.S.; L'VOV, S.M.; NEMCHENKO, V.F.; SAMSONOV, G.V.

Physical properties of the boride phases of chromium. Porosh. met.
2 no.6:50-53 N-D '62. (MIRA 15:12)

1. Khersonskiy gosudarstvennyy pedagogicheskiy institut imeni
N.K.Krupskoy i Institut metallokeramiki i spetsial'nykh splavov
AN UkrSSR.

(Chromium boride—Testing)

L 18556-63

EPR/ENT(1)/BDS

AFPTC/ASD

Pg-4

WW

ACCESSION NR: AP3004262

8/0131/63/003/007/0311/0312

AUTHOR: Samsenov, G. V.; Kislyy, P. S.; Vlasov, K. R.

66

TITLE: Forming protective thermocouple caps

SOURCE: Ogneupory*, no. 7, 1963, 311-312

TOPIC TAGS: protective cap, thermocouple, press, carbide, boride, silicide, aluminum oxide, zirconium oxide

ABSTRACT: A press has been developed for forming one-piece protective caps for thermocouples used in steel and iron smelting. To form a cap, plastic material is placed in cylinder (5) (see Enclosure) and pressed with plunger (9) into the annulus between the centered hollow needle (4) and the interchangeable inset (2). The head of the cap is formed in the base (12). To allow for passing of air, a steel rod (8) is removed from the hollow needle. Using this press, the authors prepared protective caps of carbides, borides, silicides, aluminum oxide, and zirconium oxide. Orig. art. has: 1 diagram.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov, AN ²USSR (Institute of Metal Ceramics and Special Alloys, Academy of Sciences, Ukrainian SSR)

SUBMITTED: 00

DATE ACQ: 20Aug63

ENCL: 01

SUB CODE: MA,ML

NO REF SOV: 001

OTHER: 000

Card 1/2,

KOCHO, V.S., doktor tekhn.nauk; LAPITSKIY, V.I., doktor tekhn.nauk;
PAYZANSKIY, L.D.; RESHETNYAK, Yu.S.; RUBINSKIY, P.S.;
DRIYSHLYUK, V.M.; KISLYY, P.S.

Measuring the temperature of the metal during the process of
smelting in a converter with a top oxygen blow. Met. i gornorud.
prom. no. 2:28-31 Mr-Ap '64. (MIRA 17:9)

AK5014981

BOOK EXPLOITATION

UK/62
60
B.

Samsonov, Grigoriy Valentinovich; Kislyy, Pavel Stepanovich

High-temperature non-metallic thermocouples and tips. (Vysokotemperaturnyye nemetallichezkiye termopary i nakonechniki) Kiev, "Naukova dumka", 1967. 160 p. Illustrations. (At head of title: "Kievskiy gosudarstvennyy universitet imeni Tarashevskogo")

21
ACS: heat transfer, metallic thermocouple, nonmetallic thermocouple, refractory compound, thermocouple, thermocouple sheath

PURPOSE AND COVERAGE: This book is intended for scientists and engineers conducting research in the field of physics and engineering and automation in metallurgy; it may also be useful to persons in plant laboratories and to students and aspirants connected with metallurgy and heat power engineering. The book contains methods for producing thermoelements and thermocouples. Special attention is given to high-temperature nonmetallic thermocouples and sheathing of metallic thermocouples. Numerous references are mentioned. There are 22 references: 11 Russian, 11 English, 22 unidentified, 18 German, 3 French and 1 Polish.

Card 1/3

L 50198-65

AM 014981

TABLE OF CONTENTS [abridged]:

Foreword -- 1

Introduction -- 5

Ch. I. Thermoelectric properties of refractory compounds -- 17

1.1. General technical and scientific aspects of thermoelectric properties of refractory compounds

1.2. Properties of thermoelectric materials of nonmetallic compounds -- 83

Ch. IV. Thermocouples with thermoelectrodes made of refractory compounds -- 97

Ch. V. Sheathing of metallic thermocouples -- 144

2/3

References -- 155

AVAILABLE: Library of Congress

SUB CODE: EE, IE

SUBMITTED: 23 MAR 62

NO ADV SOVI 1-6

OTHER: 081

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Card 3/3

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BOOK EXPLOITATIONS

Leyensovich (Doctor of Technical Sciences) and and

Dr. G. V. Kiselev, Doctor of Technical Sciences, Pr. Dnabar, Leningradskaya St. 70-80.

1. Alexander, George J. 1911. The ...

Official Candidate of the Union

[illegible]

[Illegible text]

L 63996-03

AP0016672

...the standpoint of engineering economy. It boosts the furnace output, im-
proves the quality, reduces the amount of rejected material, and increases

TABLE OF CONTENTS (Abridged):

Foreword -- 5

Ch. I. Analysis of Methods Applied to Measure Temperature of Metal in Open-Hearth
Bath -- 7

Ch. II. Manufacturing of Sintered Nozzles for Thermocouples -- 35
Thermochemical properties of refractory compounds and their use for thermo-
couple nozzles -- 35

2. Thermocouple nozzles used in the industry -- 43

3. Methods of manufacturing nozzles -- 48

4. Compacting of zirconium boride made nozzles -- 52

...of compacted material for nozzles from zirconium boride -- 59

...properties of nozzles made of zirconium boride

Development and Investigation of the Method of Continuous Measuring of
Liquid Steel Temperature -- 64

AM5016672

Ch. IV. Effect of Technological and Thermal Factors on Temperature Condition of
Open-hearth Furnace Bath -- 194

Ch. V. Economic Effectiveness of Continuous Measuring of Liquid Steel Temperature
During the Finishing of Open-hearth Smelting -- 211

References -- 219

SUBMITTED: 02P-66*

NO RET SOV: 116

Card

Author: P. S. Kuzenkova, M. A.

eutectic composition. In the course of the experiment, a solution of
the alloy was dissolved in the zirconium beaker and a new alloy, a solution of

Card 11

--- INSTITUTE: Institut problem materialovedeniya AN SSSR, Material Science

Author

Editor

Reviewer

Card 2/2

1-44724-65

ACCESSION NR: AP5010400

fineness of grinding and the size and shape of the particles, these parameters being the same as for pure niobium carbide. (This indicates that, unlike the case of aluminum nitride, the addition of ammonium chloride does not contribute to the additional decrease in the strength of the niobium carbide and to its fine-disperse pulverization. The pulverized parts and HgCl containing specimens of niobium carbide were then sintered in a tubular furnace at gradually higher temperatures. The findings were used to calculate the diffusion coefficients of niobium in niobium carbide with and without the addition of ammonium chloride. The results confirm that the addition of ammonium chloride accelerates the sintering process by creating a defective structure which increases the rate of penetration of the diffusion processes and the processes of dilatational contraction, thereby causing the shrinkage of pores. Orig. art. has: 5 figures, 4 tables.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Institute of Problems in Material Science, AN UkrSSR)

SUBMITTED: 24Sept63

ENCL: 00

SUB CODE: KX

NO REF SOT: 016

OTHER: 002

REF ID: A66666
 Pt-7/Pu-4/Pu-4 IJP(c) JD/WJ/JG/AT/WH
 ACCESSION NR: AP5010414

UR/0131/65/000/004/0028/0031

AUTHOR: Samsonov, G.V.; Kislyy, P.S.

TITLE: Protective thermocouple jackets for the continuous regulation of the temperature of molten metals

SOURCE: Ogneupory, no. 4, 1965, 28-32

TOPIC TAGS: temperature regulation, foundry technology, thermocouple jacket, jacket material, zirconium diboride, liquid steel temperature, open hearth furnace

ABSTRACT: The Sektor tugoplavkikh materialov Institute problem materialovedeniya AN URSR (Refractory Materials Section of the Institute of Materials Science Problems, AN URSR) has developed a technological process for the production of zirconium diboride jackets for thermocouples, which are used for the continuous regulation of the temperature of molten metals in open hearth furnaces. The zirconium diboride jacket material has shown positive results in protective temperature regulation in open hearth furnaces and bottom-blown basic converter.

Card 1/2

APPROVED

ACCESSION NR: AP5010414

of liquid cast iron at the Volgogradskiy traktoray zavod (Volgograd Tractor Factory).
Studies made at the Kommunarsk and other metallurgical plants showed that the continuous
measurement of the temperature of the liquid metal in the bath of an open hearth is made
by means of thermocouples with ZrO_2 jackets makes it possible to reduce the spot age
by 10%. Continuous temperature measurement permits the elimination of overheating of
the metal, acceleration of the melting, and automation of temperature control. Orig.
art. has: 5 figures.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Institute of Materials
Science Problems, AN UkrSSR)

SUBMITTED: 00

ENCL: 00

SUB CODE: MM, TD

REF BIV 021

OTHER: 000

Card 2/2

KISLYY, P.S.; KUZEMKOVA, M.A.

Gas-tight protective casing of thermocouples made of zirconium
boride. Porosh. met. 5 no.1132 6 Ja 1965. (MIRA 18:10)

1. Institut problem materialovedeniya AN USSR.

APR 1966 NR. 1 APR 008279

3/ 07/ 65/000/003 0088/0093

Authors: Popov, V. A.; Mitrokhin, A. K.; Kislyy, P. S.; Shtepko, V. M.

Performance of zirconium boride thermocouple tips in a Bessemer converter

Source: Poroshkovaya metallurgiya, no. 3, 1965, 88-93

TOPIC TAGS: steel industry, smelting temperature/ PR 30/6 thermocouple

ABSTRACT: The use of a multilayer thermocouple shield (made of sintered metal) in a Bessemer converter with an acid lining is discussed. This procedure had been previously used for measuring the temperature in the open hearth furnace and in a converter with nonacid lining. The purpose of this experiment was to develop a continuous temperature-indicating system by using thermocouples. The thermocouple tip exposed directly to the molten metal. The temperature of the tip appears to be approximately equal to the temperature of the metal. The thermocouple assembly. This measuring process is compared with others previously used (particularly during several working cycles). An extended temperature-time diagram shows the moment when the bottom of the converter including the thermocouple tip emerges out of the metal. During this period the

Card 1/2

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Thermocouple indicates the temperature of the lining. Deformation of the tip due to mechanical forces limits the use of a sintered ceramic tip at 1000°C for approximately 2 hours. Orig. art. has 1 drawing.

ASSOCIATION: Kiyovskiy politekhnicheskii institut (Kiev Polytechnic Institute);
Dneprovskiy institut chernoy metallurgii (Dnipro Institute for Heavy Metallurgy);
Kievskiy gosudarstvennyi universitet imeni Taras Shevchenko (Kiev State University).

SUBMITTED: 11Mar64

ENCL: 00

SUB CODE: K4

REF ID: A66003

OTHER: 000

pg 2,2

KUZENKOVA, M.A.; KISILEV, I.S.

Obtaining and determining certain properties of alloys of zirconium
beride with molybdenum disulfide. Jan. 1, 1955. No. 6:55-57 Je '65.
1. Institut problem materialovedeniya, Akad. Nauk SSSR (MIRA 18:8)

1. Institut problem materialovedeniya AN KazSU.

KISLYY, I.I., KUZEMKOVA, M.A.

Investigating the process of freezing-on thermocouple tips
made of zirconium boride. Porosh. met. 5 no.8:45-49 Ag '65,
(MIRA 18:9)

1. Institut problem materialovedeniya AN UkrSSR.

KU ENKOVA, M.A.; KISLYI, P.S.

Investigating the scale resistance of alloys of zirconium
boride with molybdenum disilicide. Porosh. met. 5 no. 10:
75-79 0 '65. (MIRA 18:11)

1. Institut problem materialovedeniya AN UkrSSR.

KISLYY, P.S.; KUZENKOVA, M.A.

Tips and high-temperature thermocouples with thermoelectrodes
made of silicon carbide. Porosh.net. 5 no.11:41-44 N '65.

(MIRA 18:12)

1. Institut problem materialovedeniya AN UkrSSR. Submitted
February 23, 1965.

1. 56054-65 EMT(m)/EMT(a)/EMP(w)/EMT(1)/EMO(m)/EMP(t)/EMA(4)/EMT(n)-2/T/EMI/EMP(s)/
EMT(c) Pa-h/Pu-h IJP(c) JD/bW/JG

ACCESSION NR: AP5016036

UR/0226/65/000/006/0055 '0059

AUTHOR: Kuzenkova, M. A.; Kislyy, P. S.

TITLE: Synthesis and some properties of alloys of zirconium boride with molybdenum disilicide

SOURCE: Poroshkovaya metallurgiya, no. 6, 1965, 55-59

TOPIC TAGS: zirconium boride, zirconium boride alloy, molybdenum disilicide containing alloy, alloy synthesis, alloy structure, alloy physical property

ABSTRACT: The structure and properties of sintered zirconium-boride base alloys containing from 5 to 25% molybdenum disilicide have been investigated. The maximum silicon content, even in alloys with 15, 20, or 25% MoSi_2 , did not exceed 4.0% probably because of evaporation of silicon at high temperatures. Alloys containing up to 15% MoSi_2 had a single-phase structure. Their melting temperature ranged from 2545 ± 25 to $2610 \pm 25^\circ\text{C}$, the microhardness from $16.6-20.5$ to 2.35 to 2.45 kg/mm^2 , and the resistivity from 32 to 27.4 $\mu\text{ohm-cm}$. The resistivity of the alloys increased linearly with increasing temperature (metallic conductivity).

Alloys containing 25% MoSi_2 are two-phase alloys consisting of a zirconium-boride base solid solution with a hexagonal lattice, and another phase with a micro-

Card 1/2

ASSOCIATION NR: AP5016036

hardness of 3957—4232 n/mm². Because all the alloys are oxidation resistant up to 1800°C, the field of application of zirconium oxide can be significantly extended. Orig. art. has: 2 figures and 4 tables. (15)

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Institute of the Problems of the Science of Materials, AN UkrSSR)

SUBMITTED: 09Jul64

ENCL: 00

SUB CODE: 191

NO REF SOV: 016

OTHER: 002

ATD PRESS: 4035

Card 2/2

L 01803-66 EJP(e)/ENT(m)/EJP(w)/EJP(i)/EJP(n)-2/T/ENT(t)/ENT(k)/ENT(z)/ENT(b)
IJP(c) JD/MH/JG

ACCESSION NR: AP5020769

UR/0226/65/000/008/0045/0049

AUTHOR: Kislyy, P. S.; Kuzenkova, M. A.

TITLE: Immersion method of making thermocouple jackets from zirconium boride

SOURCE: Poroshkovaya metallurgiya, no. 8, 1965, 45-49

TOPIC TAGS: thermocouple, immersion thermocouple, thermocouple jacket, zirconium boride jacket

ABSTRACT: Zirconium-boride jackets for immersion-type thermocouples can be made by dipping a metallic pattern into a mixture of zirconium-boride powder (79.6% Zr, 17.6% B, 0.21% C_{tot}, 0.23% Fe) and paraffin, with oleic acid added as a surface-active diluent. The coefficient of packing $K_p = V_p/V_s$, where V_p is the volume of powder and V_s is the volume of semifinished product, was used as a criterion of the final quality of the semifinished product. The mixture containing 8-10% paraffin with 1% oleic acid was found to be the most suitable and was used for jackets with a wall thickness of 2-2.2 mm. Unsintered jackets had a K_p of 0.6, i.e., close to the theoretical K_p for spherical particles. Mixtures with a higher paraffin content, e.g., containing more than 25, 18, and 19% paraffin in mixtures with pure paraffin and 1 and 2% oleic acid, were structurally unstable. Paraffin was removed

Cord 1/2

L 01803-66

ACCESSION NR: AF5020769

before sintering by heating the jackets, which were packed in roasted aluminum-oxide powder. This was followed by sintering. The finished jacket had a porosity of 10--12% and a bending strength of 150 Mn/m², which is almost equal to the density and bending strength of extruded and sintered jackets. Orig. art. has: 2 figures. (MS)

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Institute of the Problems of the Science of Materials, AN UkrSSR)

SUBMITTED: 22Oct64

ENCL: 00

SUB CODE: 1E, 7D

NO REF SOV: 015

OTHER: 001

ATD PRESS: 4085

9D
Cord 2/2

L 7061-66 EWP(a)/EWT(m)/EPF(c)/EWP(1)/EPF(n)-2/EWP(t)/EWP(k)/EWP(z)/EWP(b)

ACC NR: AP5026275 IJP(c) JD/WH/JQ/WB SOURCE CODE: UR/0226/65/000/010/0075/0079

AUTHOR: Kuzenkova, M. A.; Kislyy, P. S.

ORG: Institute of the Problems of the Science of Materials, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Investigation of the oxidation resistance of alloys of zirconium boride with molybdenum disilicide

SOURCE: Poroshkovaya metallurgiya, no. 10, 1965, 75-79

TOPIC TAGS: zirconium boride, zirconium boride alloy, molybdenum disilicide containing alloy, alloy oxidation, oxidation resistance

ABSTRACT: Hot-extruded pure zirconium boride (ZrB_2) with a porosity of 8%, and compacted and sintered ZrB_2 and alloys of zirconium boride with molybdenum disilicide ($(Zr_{1.9})_{23}MoSi_{1.1}$, $(Zr_{1.7})_{13}MoSi_{1.2}$, and $(Zr_{1.6})_8MoSi_{1.4}$) were oxidized in air at temperatures up to 1000C for up to 10 hr. Sintered ZrB_2 had a porosity of about 15%; the porosity of the alloys was within the limits of 5 to 13%. In the 800-1000C range the oxidation of pure ZrB_2 followed a linear rate. More porous ZrB_2 had an appreciably higher oxidation rate; specimens with a porosity of about 15% completely disintegrated after 8-10 hr exposure. At 1200-1400C the oxidation rate was higher but the specimens did not disintegrate because of the formation of a dense, protective, oxide film which greatly impedes the oxygen diffusion. The film

Card 1/2

L 7061-66

ACC NR: AP5026275

disintegrates at 1450C. The oxidation rate of zirconium boride-molybdenum disilicide alloys at temperatures of about 1000C followed a pattern similar to that for pure ZrB_2 . At high temperatures, up to 1500—1550C, dense, oxidation-resistant films are formed at the surface of the base metal. The films are continuous, with a small number of closed pores, adhere strongly to the base metals, and effectively block the access of oxygen to the base material. The films formed at 1600C have interconnected pores which reach the metal surface, and the oxidation rate changes to linear. Thus, the alloys of zirconium boride with molybdenum disilicide have very high oxidation resistance and can be used at temperatures up to 1500—1550C. Orig. art. has: 4 figures and 1 table. (MS)

SUB CODE: MT, IC/ SUBM DATE: 09Jul64/ ORIG REF: 005/ OTH REF: 003/ A'D PRESS: 4/14/4

60
Card 2/2

KISLIY, P.S.; KUZENKOVA, M.A.; SHTAYNLYAUF, G.I.; SOLOVYKH, M.I.

Thermocouple tips for continuous temperature control in copper smelting furnaces. *Ogneuoory* 30 no.9:26-39 '65.

(MIRA 18:9)

1. Institut problem materialovedeniya AN UkrSSR (for Kislyy, Kuzenkova). 2. Balkhashskiy gornometallurgicheskiy kombinat (for Shtaynlyauf, Solovykh).

KUTENKOVA, M.A.; KISLYY, P.S.

Preparation of zirconium diboride. Porosh.met. 5 no.12:8-12
D '65. (MIRA 19:1)

1. Institut problem materialovedeniya AN UkrSSR. Submitted
March 26, 1965.

L 21301-66 EWP(s)/ENT(m)/EPF(n)-2/EWP(t)/EWP(k) IJP(c) JD/WH/JJ

ACC NR: AP6007286

SOURCE CODE: UR/0226/66/000/002/0046/0055

AUTHOR: Kuzenkova, M. A.; Kislyy, P. S.

ORG: Institute of Problems of Metal Science, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Mechanism of shrinkage of zirconium diboride in the process of sintering

SOURCE: Poroshkovaya metallurgiya, no. 2, 1966, 46-55

TOPIC TAGS: zirconium compound, sintering, isothermal transformation, surface tension

ABSTRACT: A description is given of the regularities of shrinkage of zirconium diboride during the process of sintering. It is established that zirconium diboride, like other brittle materials, has the same shrinkage in the direction of application of the pressing forces and in the radial direction. On the basis of the kinetic dependences of the shrinkage and the changes in porosity, it is shown that with isothermal processing of up to 30 minutes intense shrinkage of zirconium diboride may be described as a process of sliding along grain boundaries under the effect of surface tension forces. With isothermal processing of over 30 minutes shrinkage is due to viscous flow caused by directed diffusion displacement of the atoms under the effect of the gradient of the vacancies on the pore surfaces and the grain boundaries. The presence of dodecaboride in zirconium diboride activates shrinkage in connection

Card 1/2

L- 21301-66

ACC NR: AF6007286

with the speeding up of diffusion processes on the grain boundaries. Orig. art.
has: 8 figures, 4 formulas and 1 table. [Author's abstract.]

SUB CODE: 11, 13/ SUBM DATE: 05May65/ ORIG REF: 017/ OTH REF: 018/

Card 2/2

L 21144-66 EWT(m)/EPF(n)-2/T/EWP(t) IJP(c) JD/WW/JG

ACC NR: AP6001468

SOURCE CODE: UR/0226/65/000/012/0008/012

AUTHORS: Kuzenkova, M. A.; Kislyy, P. S. 4/2
B

ORG: Institute of Problems of Metal Science AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Preparation of zirconium diboride

SOURCE: Poroshkovaya metallurgiya, nr. 12, 1965, 8-12

TOPIC TAGS: zirconium, diboride, boron, carbide, metallographic analysis, x ray analysis, reduction

ABSTRACT: On the basis of x-ray and metallographic analyses¹² it is shown that zirconium diboride, obtained by the method of boron carbide reduction at temperatures above 1650C, contains about $4.94 \pm 0.12\%$ ZrB_{12} . One-phase zirconium boride may be obtained at temperatures below 1650C or at high temperatures with subsequent slow cooling (6--8 degrees/min) within a temperature range of 1650--1400C. The Microhardness of zirconium dodecarbide was determined as 45 ± 1.5 Gn/m². Orig. art. has: 2 tables, 3 formulas. (Based on author's abstract.) (AJM)

SUB CODE: 07, 11/ SUBM DATE: 26Mar65/ ORIG REF: 006/ OTH REF: 010/
Card 1/1 JLR

L 31930-66 EWP(e)/ENT(m)/EWP(t)/ETI/ENF(k) IJP(c) JD/TW/26

ACC NR:AP6015348

(N)

SOURCE CODE: UR/0226/66/000/005/0016/0023

AUTHOR: Kislyy, P. S.; Kuzenkova, M. A.

ORG: Institute for Problems in the Science of Materials AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Sintering of zirconium diboride with molybdenum alloys

SOURCE: Poroshkovaya metallurgiya, no. 5, 1966. 16-23

TOPIC TAGS: sintering, zirconium alloy, molybdenum alloy, activation energy, shrinkage, zirconium molybdenum alloy

ABSTRACT: The article deals with the shrinkage of samples from mixtures of zirconium diboride with 5-, 10-, and 15% molybdenum in the process of slow heating to temperatures 1800C or during the initial period of sintering. With rapid heating to 1700-1750C, growth of samples (rather than shrinkage) is observed during the formation of a solid solution of Mo in ZrB_2 , due to heterodiffusion. The activation energy of the shrinkage process, based on the computation of the shear viscosity, equals, respectively, 367 ± 48 , 352 ± 28 , and 379 ± 46 kJ/mol for ZrB_2 alloys with the 5-, 10-, and 15% molybdenum, i.e., less than the activation energy in the shrinkage of zirconium diboride (678 ± 55 kJ/mol), which indicates that the presence of molybdenum activates the diffusion processes during sintering. Orig. art. has: 5

Card 1/2

L 31930-66
ACC NR:AP6015348

figures, 2 formulas, and 1 table. [Translation of author's abstract]
[AM]

SUB CODE: 11/ SUBM DATE: 14Nov65/ ORIG REF: 008/ OTH REF: 003

MT
Card 2/2

L 32048-66 EWI(e)/EWI(m)/T/EWP(t)/ETI IJP(c) JD/WW/JG

ACC NR: AP6013340 (A) SOURCE CODE: UR/0363/66/002/004/0617/0625

AUTHOR: Kislyy, P.S.; Kuzenkova, M.A.

ORG: Institute of Materials Science Problems, Academy of Sciences UkrSSR (Institut problem materialovedenlya Akademii nauk UkrSSR)

TITLE: Study of the conversion of zirconium dodecaboride into zirconium diboride

SOURCE: AN SSSR. Izvestiya. Neorganicheskiy materialy, v. 2, no. 4, 1966, 617-625

TOPIC TAGS: zirconium compound, boride

ABSTRACT: The conversion of ZrB_{12} into ZrB_2 was studied by dilatometric, thermographic, and microstructural methods. It was shown that during heating, ZrB_{12} converts into ZrB_2 in the 1530 — 1650C temperature range. The transformation is associated with a decrease in volume, evolution of heat, and increase of general porosity. The kinetics of the transformation are determined by pure diffusion processes. The generation of centers of the new phase is observed in the volume of the matrix at the site of micropores and other defects. The diboride formed accretes coherently around the primary grain of diboride, and thus the latter increases in size. Pores are formed in place of the dodecaboride grains. The coefficient of linear expansion of zirconium

Card 1/2

UDC: 546.831'271

L 32018-66

ACC NR: AP6013340

dodecaboride was found to be $28 \times 10^{-6} \text{ deg}^{-1}$ in the 1600 — 2200C range. Orig. art.
has: 8 figures.

SUB CODE: 11 / SUBM DATE: 30Aug65 / ORIG REF: 004 / OTH REF: 006

Card 2/2

L 36311-66 EWP(k)/EWT(m)/EWP(e)/EWP(t)/ETI IJP(c) JD/WW/JW/JG

ACC NRAP6017097 (A) SOURCE CODE: UR/0226/66/000/001/0012/0016

AUTHOR: Kuzenkova, M. A.; Kislyy, P. S.

ORG: Institute for Problems in Science of Materials, AN UkrSSR (Institut problem materialovedeniya AN

TITLE: Growth of zirconium diboride grains during sintering

SOURCE: Poroshkovaya metallugiya, no.1, 1966, 12-16

TOPIC TAGS: zirconium compound . grain growth, sintering, shrinkage, surface tension, activation energy, boride

ABSTRACT: This paper presents the results of the investigation of growth of zirconium diboride grains during sintering. It is assumed that during the initial period of sintering (about 5 minutes), the grain growth is conditioned by the mechanism of migration of the particles under the effect of surface tension forces causing grains to combine on polygonized borders. At sintering temperatures exceeding 1800C, very intensive shrinkage is observed in the zirconium diboride samples with isothermal holding up to 30 min. Actually, with 1 to 2 min at temperatures from 2100—1700C, the average grain size is found

Cord 1/2

L 36311-66

ACC NR: AP6017097

to increase by 140%. The activation energy of grain growth equals
120 ± 40 kJ/mol. Orig. art. has: 6 figures and 3 formulas. [Based
on author's abstract] [AM]

SUB CODE: 11/ SUBM DATE: 05May65/ ORIG REF: 002/ OTH REF: 017/

Card 2 / 2

L 46665-66 ENT(d)/ENP(e)/ENT(m)/ENP(v)/ENP(t)/ETI/ENP(k)/ENP(h)/ENP(l)

ACC NR: AP6009574 (N)

SOURCE CODE: UR/0226/65/000/011/0041/0044

IJP(c) JD/WB/JG/WB/AT/WB

AUTHOR: Kislyy, P. S.; Kuzenkova, M. A.

ORG: Institute for the Study of Materials, AN UkrSSR (Institut problem materialovedeniya AN UkrSSR)

TITLE: Silicon carbide-tipped high-temperature thermocouples with silicon carbide thermoelectrodes

SOURCE: Poroshkovaya metallurgiya, no. 11, 1965, 41-44

TOPIC TAGS: silicon carbide, thermocouple, high temperature material, corrosion protection, thermoelectromotive force

ABSTRACT: On the basis of a survey of literature data it is shown that SiC prepared from SiC powder and carbon black is a virtually nonporous material and, when used as the material of thermocouple tips and thermoelectrodes, it is superior to high-temperature ceramics with respect to use in oxidizing and, especially, redox media, since it resists intercrystalline corrosion which causes ceramic thermocouple tips to lose their imperviousness to gas within a little as 10-12 hr of operation at 1700-1800°C. SiC of this kind displays constant physico-

Card 1/2