

The Dose Field of a Linear Source. Letter
to the Editor

77253
SOV/89-8-2-18/30

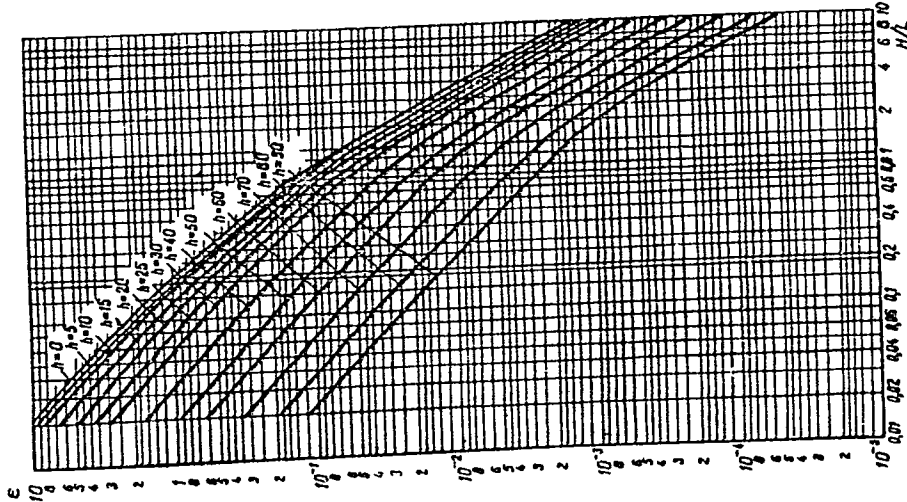


Fig. 2. Nomogram for calculations of dose strength
in water due to a linear source.

Card 4/6

The Dose Field of a Linear Source. Letter
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77253
SOV/89-8-2-18/30

Equation (3) holds for an object of infinite length and is also good for bounded geometry to approximately 10% accuracy. The authors computed the dose field for Co^{60} rays. Absorber was water, and values of constants used in the computation of Fig. 2 were: $\mu = 0.063 \text{ cm}^{-1}$; $\alpha_1 = -0.095$; $\alpha_2 = 0.060$; $A_1 = 8.88$; $A_2 = 1 - A_1 = -7.88$. To find from this picture the dose in air at a point A, one has to use the curve $k = 0$. An approximate formula accurate to 10-15% is:

$$P_A = P_0 e^{-0.05(h - \Delta)}, \quad (6)$$

where P_0 is dose strength in air at the given point, and μ and Δ are constants, depending on ratio H/L . This formula works for cases $h \geq 10 \text{ cm}$, at $H/L \leq 0.1$; for $h \geq 15 \text{ cm}$, at $0.6 \geq H/L \geq 0.2$; and for $h \geq 20 \text{ cm}$,

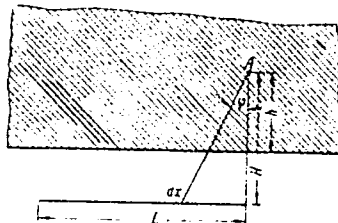
Card 3/6

The Dose Field of a Linear Source. Letter
to the Editor

77253

SOV/89-8-2-18/30

where $\varphi_0 = \tan^{-1} \frac{h}{H}$; H is distance from point A to the source; k_γ , γ - constant of the isotope; m , linear activity of the source in μ Curie/cm (if m is expressed in mg equivalent Ra, then $k_\gamma = 8.4 \text{ R/h} = 0.14 \text{ R/min}$); μ , linear coefficient of decrease of a thin beam of γ - rays; $A_2 = 1 - A_1$, a constant; α_1 and α_2 , constants whose values for various absorbers and various energies of radiation are given in Goldstein's report and Rockwell's book (see refs).



Card 2/6

Fig. 1. Diagram for calculations of doses due to a linear source.

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SOV/89-8-2-18/30

AUTHORS: Grammatikati, V. S., Margulis, U. Ya., Khrushchev, V. G.

TITLE: The Dose Field of a Linear Source. Letter to the Editor

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 2, pp 154-155 (USSR)

ABSTRACT: Since radioactive line sources are fairly common in applied and experimental devices, the authors thought it useful to present an approximate but sufficiently accurate method of calculations. As is known, the dose strength P_A of point A at distance h inside an object, Fig. 1, can be represented by means of tabulated integrals of Sievert (see ref):

$$P_A = \frac{k \cdot m}{H} \left[A_1 \int_0^{\varphi_1} r^{\mu h (\alpha_1 + 1) \sec \varphi} d\varphi + A_2 \int_0^{\varphi_2} r^{\mu h (\alpha_2 + 1) \sec \varphi} d\varphi \right]. \quad (3)$$

Card 1/6

- 19
- SOV/5410
- Transactions of the Tashkent (Cont.)
- Khrushchev, V. G., A. S. Lopilin, U. Ya. Margulis, S. M. Stepanov,
L. I. Belen'kiy, T. V. Bromberg, and V. G. Ivilyev [Ministry of
Health USSR]. Industrial Gamma-Plant for Sterilization of Medical
Materials 170
- Khrushchev, V. G., B. A. Rubin, L. V. Metlitskiy, A. I. Rytov,
N. M. Gaydin, U. Ya. Margulis, V. S. Grammatikati, V. G. Vlasov,
and A. V. Petrov [Ministry of Health USSR]. Gamma-Plant for
Continuous Irradiation of Potatoes 182
- Prkof'yev, N. S. [Institut ekonomiki AN SSSR - Institute of
Economics AS USSR]. Economic Efficiency of the Use of High-
Capacity Gamma-Plants in the Light and Food Industry 192
- Abdullayev, A. A., Ye. M. Lobanov, A. P. Novikov, and A. A.
Kraydarov [Institute of Nuclear Physics AS UzSSR]. Use of
a Multichannel Scintillation Gamma-Spectrometer for the Analysis
of Rock Specimens 199

Card 10/20

- 10
- Transactions of the Tashkent (Cont.) SOV/5410
- Leshchinskiy, N. I., G. N. Lokhanin, and A. S. Shtan' [Glavatom - Main Administration for the Utilization of Atomic Energy]. Organization of Laboratories for Experiments Using Radioactive Substances 132
- Bibergal', A. V., N. I. Leshchinskiy, M. M. Korotkov, and O. G. Arakelov. Development of a Transportable Gamma-Plant for Seed Irradiation Before Sowing 148
- Artmeladze, I. D., A. A. Bibergal', and T. V. Tsetskhladze [Institut fiziki AN GruzSSR - Institute of Physics AS GruzSSR] Experimental Semi-Industrial Gamma-Plant for Radiation Processing of Agricultural Products in Georgia 155
- Bibergal', A. V., N. I. Leshchinskiy, U. Ya. Margulis, and V. G. Khrushchev. [Ministerstvo zdoravyookhraneniya - Ministry of Health USSR]. Some Problems of Design and Construction of High-Capacity Gamma-Plants 164

Card 9/20

176

Transactions of the Tashkent (Cont.)

SOV/5410

instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

TABLE OF CONTENTS:

RADIOACTIVE ISOTOPES AND NUCLEAR RADIATION
IN ENGINEERING AND GEOLOGY

Lobanov, Ye. M. [Institut yadernoy fiziki UzSSR - Institute of Nuclear Physics AS UzSSR]. Application of Radioactive Isotopes and Nuclear Radiation in Uzbekistan

7

Taksar, I. M., and V. A. Yanushkovskiy [Institut fiziki AN Latv SSR - Institute of Physics AS Latvian SSR]. Problems of the Typification of Automatic-Control Apparatus Based on the Use of Radioactive Isotopes

9

Card 3/20

176

Transactions of the Tashkent (Cont.)

SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE : The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

Card 2/20

MARGULIS, U. Ya.

~~INT. SEC. G. D.~~

176

PHASE I BOOK EXPLOITATION 304/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent, 1959.

(Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 449 p. Errata slip inserted. 1,500 copies printed.

Sp. Publishing Agency: Akademiya nauk Uzbekskoy SSR.

Responsible Ed.: S. V. Starodubtsov, Academician, Academy of Sciences Uzbek SSR. Editorial Board: A. A. Abdullayev, Candidate of Physics and Mathematics; D. M. Abdurasulov, Doctor of Medical Sciences; U. A. Arifov, Academician, Academy of Sciences Uzbek SSR; A. A. Borodulina, Candidate of Biological Sciences; V. N. Ivashev; G. S. Ikramova; A. Ye. Kiv; Ye. H. Lebanov, Candidate of Physics and Mathematics; A. I. Nikolayev, Candidate of Medical Sciences; D. Nishanov, Candidate of Chemical Sciences; A. S. Sadykov, Corresponding Member, Academy of Sciences USSR, Academician, Academy of Sciences Uzbek SSR; Yu. N. Talanin,

Card 1/20

LANDAU, Lev Davydovich; LIFSHITS, Yevgeniy Mikhaylovich; MARGULIS,
U.Ya., red.; AKHLAMOV, S.N., tekhn.red.

[Theoretical physics] Teoreticheskaya fizika. Moskva, Gos.
izd-vo fiziko-matem.lit-ry. Vol.2. [Field theory] Teoriya
polia. Izd.3-e, perer. 1960, 400 p. (MIRA 13:7)
(Field theory)

Protection From X- and Gamma Rays

SOV/5330

The book focuses main attention on protection problems themselves, dealing in detail with the passage-mechanism of x-rays and γ -rays through matter, principles of design, and the properties of materials used for protection. Protective structures and installations are also described, and examples of design and design nomograms are given. There is also some information on the biological effects of radiation. The present work represents an attempt to collect, systematize, and present in detailed and orderly fashion the considerable number of articles on problems of radiation protection which have appeared in the periodical literature to date. The second edition is an improvement over the first edition, inasmuch as the material has been reworked and supplemented with new material, and some material of a general character has been eliminated. Ch. I to III and Section 4 of Ch. IV were written by U. Ya. Margulis; A. V. Bibergal' wrote Ch. IV (excepting Section IV), V, VI, and VII; Ye. I. Borob'yev wrote Ch. VIII; A. V. Bibergal' and U. Ya. Margulis selected and compiled the material for the appendices. There are 65 references: 38 Soviet (including 5 translations), 26 English, and 1 German.

Card ~~2~~/8

MARGULIS, U Ya.

PHASE I BOOK EXPLOITATION SOV/5330

Bibergal', Anatoliy Viktorovich, Usher Yakovelevich Margulis, and Yevgeniy Ivanovich Vorob'yev

Zashchita ot rentgenovskikh i gamma-luchey (Protection From X- and Gamma Rays) 2d ed., rev. and enl. Moscow, Medgiz, 1960. 273 p. 10,000 copies printed.

Ed. (Title page): K. K. Aglintsev, Professor; Ed.: D. M. Alekseyev; Tech. Ed.: N. I. Lyudkovskaya.

PURPOSE : This book is intended for the general reader who has no special training in physics, and for those who are working near radiation sources.

COVERAGE: The authors discuss an important phase of the theory of protection against radiation, i.e., against the harmful effects of x-rays and γ -rays. The preface contains a brief introduction to atomic physics. Material on dosimetry and the monitoring of protection against x-rays and γ -rays necessary to an understanding of problems of protection is also included.

Card 1/8

LEYPUNSKIY, Ovsey Il'ich; NOVOZHILOV, Boris Vasil'yevich; SAKHAROV,
Vsevolod Nikolayevich; MARGULIS, U.Ya., red.; MURASHOVA, N.Ya..
tekhn.red.

[Propagation of gamma quanta in matter] Rasprostraneniye
gamma-kvantov v veshchestve. Moskva, Gos.izd-vo fiziko-matem.
lit-ry, 1960. 207 p. (MIRA 14:1)
(Gamma rays)

LEBEDINSKIY, A.V., red.; KRAYEVSKIY, N.A., red.; KROTKOV, F.G.,
red.; GRIGOR'YEV, Yu.G., red.; MARGULIS, U.Ya., red.;
PETROV, R.V., red.

[Collection of abstracts on radiation medicine for 1957]
Sbornik referatov po radiatsionnoi meditsine za 1957 god.
Moskva, Medgiz. Vol.1. 1959. 202 p. (MIRA 17:5)

MARGULIS, U. Y.

TABLE I BOOK REFERENCES

80V/7889

General radioactivity with 1 centimeter-thick metal (Collection of Radioactivity and Physics of the USSR, Moscow, 1959, 499 p. Errors 810 printed, 7,000 copies printed).

Ed. (Title page): B. G. Quast, U. Ya. Margulis, A. F. Kary, K. Yu. Zemanov, Yu. K. Shubenberg; Ed. (Index book): V. I. Lebnov; Tech. Ed.: A. I. Kabanov.

NOTE: This collection of articles is intended for physicists, sanitation and public health doctors, chemists and other specialists working in radioactive dosimetry.

OPERATOR: This work discusses the following subjects: (1) principles of operating sanitation and dosimetric control instruments where use is made of the physical properties of ionizing radiation; (2) physical methods for determining radioactivity in samples of air, water, soil and foodstuffs; (3) physical methods of measuring contamination of the air by radioactive gases and aerosols, and methods for determining the level of contamination of working surfaces, clothes and leather coatings; (4) methods of measuring external sources of x- and gamma-radiation, and methods of individual dosimetric monitoring; (5) Absolute and relative methods of measuring the activity of solid and liquid radioactive sources. There are four appendices relating with methods of calculating the total dosage from sources of ionizing radiation, units of activity, and doses from natural (background) radioactivity in the choice of foodstuffs, dietary regulations observed during transportation, and methods of radiological observation of workers in the field of work. The appendixes contain the following: (1) a list of the authors and the titles of the articles; (2) a list of the authors and the titles of the articles; (3) a list of the authors and the titles of the articles; (4) a list of the authors and the titles of the articles.

Ch. VIII. Methods of Individual Dosimetric Monitoring

- Introduction (U. Ya. Margulis) 399
- 1. Radiometric photographic monitoring (the DPM method) 399
- 2. Thermoluminescence monitoring (the TLM method) 402
- 3. Individual dosimetric monitoring with chemical ionization chambers (the DIC method) (K. B. Kaluzin and Yu. K. Shubenberg) 414
- 4. Individual dosimetric monitoring (the IIM method) (I. K. Kaluzin and Yu. K. Shubenberg) 420
- 5. Summary of results of individual monitoring 424

Recommended Literature

Ch. IX. Absolute and Relative Methods of Measuring the Activity of Solid and Liquid Radioactive Sources

- Introduction (K. G. Quast) 425
- 1. Corrections in measuring activity with counters (K. G. Quast) 425
- 2. Measuring the activity of beta-radiation sources with Geiger-Muller counters (A. A. Arshinov) 465
- 3. Measuring the specific activity of water samples (U. Ya. Margulis) 481
- 4. The rapid method of determining the specific activity of radioactive substances in aerosol media (B. G. Quast) 490
- 5. The absolute method of determining small concentrations of radionuclides in aqueous solutions (K. K. Zemanov, V. I. Lebnov, K. G. Quast and U. Ya. Margulis) 490
- 6. The radiometric method of determining beta-active isotopes in structures (A. Ye. Terent'yev and K. I. Dmitriyev) 491

Recommended Literature

- Appendixes
- 1. Sanitation Regulations During Transportation, Storage and Handling of Radioactive Substances 430
- II. Techniques of Calculating the Total Dosage From the Combined Effect of Ionizing Radiations (B. G. Quast) 434
- III. Units of Activity and Dose (B. G. Quast) 439
- IV. Natural Radioactive Calcium in Foodstuffs 453
- V. Symbols and Abbreviations 455
- APPENDIX: Library of Congress Card 11/71

80V/7889 6-9-60

MARGULIS, U. Ya

PLUM I BOOK INDUSTRY 807/3589

Бюджет радиационной безопасности в СССР (Collection of Radio-chemical and Environmental Problems) Moscow, Medits, 1979. 399 p. 807/3589. 9,000 copies printed.

Eds. (Title page): B.D. Gusev, U.Ya. Margulis, A.M. Mory, S.M. Tarasov, Yu.M. Shchukenberg, Ya. (Lasts book): V.I. Lashov, Tech. Ed.: A.I. Kabanov.

PURPOSE: This collection of articles is intended for physicians, radiologists and public health doctors, chemists and other specialists working in radioactive contamination.

CONTENTS: This work discusses the following subjects: (1) principles of organizing sanitation and decontamination control in institutions where work is carried on with radioactive substances; (2) physico-chemical of air, water, soil for determining certain radioactive substances in samples of air, water, soil and foodstuffs; (3) physical methods of measuring contamination of the air by radionuclides; (4) methods of measuring contamination of the air by radioactive gases with the aid of liquid scintillation counter; (5) methods of measuring contamination of external surfaces, clothes and relative methods of measuring contamination of external surfaces; (6) methods of measuring contamination of water for isotopic monitoring; (7) Absorption and relative methods of measuring activity of solid and liquid radioactive sources. There are four papers dealing with methods of calculating total dosage from sources of localized radiation, units of activity, secondary regulations observed during transportation, in the calibration of detectors, secondary regulations are discussed, distribution and handling of these active substances are discussed, distribution and handling of these active substances are discussed, distribution and handling of these active substances are discussed. The editors thank Yu. M. Shchukenberg and P.F. Shchukov for their assistance in the preparation of the book.

Ch. V. Physical Methods of Determining Contamination of the Radioactive Aerosols and Gases

1. Determination of the active concentration of naturally active aerosols (G.V. Korobov, I.I. Zhukov, T.I. Katsygor and V.M. Kozlov) 162
2. Determination of the following dust content of air with the aid of membrane filters (T.K. Iroshkin) 169
3. Determination of the concentration of active aerosols with the aid of the liquid scintillation counter (Yu.M. Shchukenberg) 185
4. Measurement of active aerosols with the aid of liquid scintillation counter (Yu.M. Shchukenberg) 195
5. Measurement of active aerosols with the aid of an electron microscopical method (L.M. Mikhaylov and A.M. Mory) 196
6. Determination of aerosols (G. Pyryts, S.M. Demov and Yu. Shchukov) 202
7. Determination of the concentration of radon in the air (V.I. Krasov, and V.M. Kozlov) 211
8. Automatic control of the radon content of air (Measurement of the concentration of active gases in the air by means of an "air wall" method) (K.M. Bogdanov, M.I. Ghar'kov, and Yu.M. Shchukenberg) 215
9. Measurement of the concentration of active gases in the air by means of a liquid scintillation counter (Yu.M. Shchukenberg) 221
10. Measurement of the concentration of active gases in the air with the aid of a liquid scintillation counter placed in a chamber of fixed volume (V.Y. Boshkov) 226

Recommended Literature

Ch. VI. Methods of Measuring the Level of Contamination of Surfaces

Introduction (Yu. M. Shchukenberg)

1. Instruments for measuring the maximum permissible level of contamination of surfaces by active substances (Yu.M. Shchukenberg) 245
2. Calibration of instruments for measuring the contamination of surfaces by active substances (Yu.M. Shchukenberg) 252
3. Measuring the contamination of fixed surfaces (Auriferous equipment and installations) (Yu.M. Shchukenberg) 256
4. Operating special counting for radioactive contamination (Yu.M. Shchukenberg) 266
5. Determining the radioactive contamination of the hands and body (Yu.M. Shchukenberg) 271
6. Determining the radioactive contamination of surfaces by the same method (Yu.M. Shchukov, Yu. Shchukov and K. Orlov) 275

Ch. VII. Methods of Measuring External Doses of X and Gamma Radiation (U.Ya. Margulis and B.M. Demov)

Introduction

1. Organization of dosimetric monitoring 279
2. Calibration of dosimeters 285

MARGULIS, U. Ya.

PHASE I BOOK EXPLOITATION SOV/1297

Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabilnykh izotopov i izlucheniya v narodnom khozyaystve i nauke, Moscow, 1957

Polezheniye izotopov. Moshchnyye gamma-ustanovki. Radiometriya i dozimetriya; trudy konferentsii... (Isotope Production and High-energy Gamma-Radiation Facilities. Radiometry and Dosimetry; Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science) Moscow, Izd-vo AN SSSR, 1958. 293 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR; Glavnoye upravleniye po ispol'zovaniyu atomnoy energii SSSR.

Editorial Board: Prolov, Yu.S. (Resp. Ed.), Zhavoronkov, N.M. (Deputy Resp. Ed.), Gritshchik, N.K., Alekseyev, P.A., Bochkarev, V.V., Lezhbinskiy, M.I., Mal'ko, T.I., Shitov, V.I., and Popova, G.L. (Secretary); Tech. Ed.: Kovtchikov, N.D.

PURPOSE: This collection is published for scientists, technologists, persons engaged in medicine or medical research, and others concerned with the production and/or use of radioactive and stable isotopes and radiation.

CONTENTS: Thirty-eight reports are included in this collection under three main subdivisions: 1) production of isotopes 2) high-energy gamma-radiation facilities, and 3) radiometry and dosimetry.

TABLE OF CONTENTS:

PART I. PRODUCTION OF ISOTOPES

Prolov, Yu.S., V.V. Bochkarev, and Ye.Ye. Kulish. Development of Isotope Production in the Soviet Union. This report is a general survey of production methods, research, raw materials, applications, investigations and future prospects for radio isotopes in the Soviet Union. Card 2/12

Bibergal', A.V., U.Ya. Margulis, and V.G. Khrushchayev. Principles and Techniques of Using Radioactive Isotopes as High-energy Sources in Microbiology and Medicine. Basic Problems concerned to planning and constructing radiation facilities are formulated according to the purposes of the facility, schematized and schematic drawings are given for some facilities and schematic purposes: a) experimental radiobiology, intended for low radiation of relatively small objects, (applied to various experimental installations intended for radiations); b) experimental installations of small size but involving various biological preparations (microorganisms, biological substrates) c) industrial radiation of raw sewage (microorganisms, biological substrates) d) industrial radiation of biological products requiring sterilization, preservation, disinfection, etc. 49 medical and therapeutic purposes. 175

Fertsovskiy, Ye.S., A.V. Bibergal', and U.Ya. Margulis. A Pilot Plant Installation for the Radiation Drying of Grain. Card 6/12

VOLCHEK, Olgierd [Wołczek, Olgierd]; TEREKHOV, Yu.P. [translator]; MARGULIS,
U.Ya., red.; DUDNIK, R.L., red.; MURASHOVA, N.Ya., tekhn.red.

[Isotopes in the service of man] Izotopy na sluzhbu cheloveka.
Pod red. U.I.A. Margulisa. [Translated from the Polish] Moskva,
Gos.izd-vo fiziko-matem.lit-ry, 1958. 271 p. (MIRA 12:2)
(Isotopes)

GUSEV, Nikolay Grigor'yevich; MASHKOVICH, Vadim Pavlovich; OBVINTSEV,
Gennadiy Vasil'yevich; MARGULIS, U.Ya., red.; FEEKH, L.K.,
nauchnyy red.; AKHLAIDOV, S.H., tekhn.red.

[Gamma radiation from radioactive isotopes and fission products;
theory and tables] Gamma-izlucheniye radioaktivnykh izotopov i
produktov deleniya; teoriya i tablitsy. Moskva, Gos. izd-vo
fiziko-matematicheskoi lit-ry, 1958. 208 p. (MIRA 12:1)
(Gamma rays) (Radioisotopes)

LIBERMAN, Yefim Arsent'yevich; MARGULIS, U.Ya., red.; BUL'DYAYEV,
N.A., tekhn.red.

[Dosimetry of radioactive isotopes] Dozimetriia radio-
aktivnykh izotopov. Moskva, Medgiz, 1958. 186 p. (MIRA 12:8)
(Radioactivity--Measurement)

Use of Strong Radiation Sources for the Sterilization
of Grain.

PA - 2727

weight of such a device (including the protective device) makes it possible to transport this sterilization apparatus from one grain container to another. So far the translation of the summary of the paper as given by the author of the paper himself. All three types of these radiation devices are discussed in detail. All three types of devices consist of three independent parts which are fitted together only when the radiation takes place- silo, radiation device and mechanism for the removal of the exposed grain. (9 reproductions, 1 Chart).

ASSOCIATION
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SUBMITTED
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Card 2/2

2.8.1956
Library of Congress

AUTHOR
TITLE

MARGULIS, U.Ya
BIBERGAL A.V., MARGULIS U.Ya., FERTSOVSIY E.S., PA - 2727
Use of Strong Radiation Sources for the Sterilization of Grain.
(Izpol'zovaniye moshchnykh istochnikov izlucheniya dlya obezzyazh-
eniya zerna /Russian/).
Atomnaya Energiya, 1957, Vol 2, Nr 4, pp 376-384, (U.S.S.R.)

PERIODICAL
ABSTRACT

The authors of the paper under review describe an experimental arrange-
ment for the sterilization of grain with the aid of the γ -radiation of
Co⁶⁰. The radiation device has the shape of a hollow cylinder to the
generatrix of which there are attached twenty radioactive bars of a to-
tal activity of 100,000 g equivalent radium. This device has water pro-
tection. The grain is automatically exposed to radiation. The operation-
al capacity of the device amounts to 1.85 tons per hour. For the con-
struction of industrial plants for the radioactive sterilization of grain
the use of Co⁶⁰ is uneconomical because of the high costs involved. Much
more favorable is the utilization of fission products of uranium which
are obtained from atomic industry. Because of the low specific activity
of the fission products the selection of the most economical configura-
tion of the radiation device is the most important problem. According
to the computations, cellular (meshed) radiation devices are most fa-
vorable. The paper under review discusses three types of such cellular rad-
iation devices, namely cylindrical, bar-shaped, and slot-shaped devices.
According to the author of the paper, slot-shaped devices can be used
most economically because they yield the highest output per unit volu-
me of the device. The output of such a radiation device amounts to 31
tons per hour at a total activity of 3.72.10⁶ Curie. The relatively low

Card 1/2

Nuclear Explosion and Some Problems (Cont.)	659
Ch. V. Radioactive Radiation Generated in an Atomic Explosion and Defensive Measures	
The nature of radioactive radiation	44
Biological effect of radioactive radiation	44
Severe radiation injury	45
Defense from radioactive radiation	48
Ch. VI. Residual Radioactivity and Decontamination	49
Radioactive contamination	54
Defense from residual radioactivity and decontamination	54
Ch. VII. Rules to be Observed by the Population During an Atomic Attack	56
Conclusion	61
AVAILABLE: Library of Congress	67
Card 4/4	

IS/mtl
9/26/58

Nuclear Explosion and Some Problems (Cont.)	659
Ch. II. Atomic Bomb and Atomic Explosion	19
Destructive factors in the detonation of ordinary bombs	
Working principle of the atomic bomb	20
Working principle of the hydrogen bomb	22
Destructive factors of an atomic explosion	24
Ch. III. The Shock Wave and Defense Against it	31
Ch. IV. Luminous Radiation and Defensive Measures	36
The nature of destructive factors of visible radiation during an atomic explosion	36
Burns	40
Fires	42
Defense against luminous radiation	42
Card 3/4	

Nuclear Explosion and Some Problems (Cont.)

659

particular importance under the circumstances. A popular exposition of the elements of nuclear physics is given. Descriptions of atomic explosions and their various forms are taken from published sources, including foreign data only partially available in the Soviet Union. There are 21 diagrams. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

Introduction	3
Ch. I. Basic Concepts of Nuclear Physics	6
Structure of the atom	6
Isotopes	9
Nuclear Forces	11
Radioactivity	12
Nuclear reactions and artificial radioactivity	15
Fission of Uranium	16
Card 2/4	

PHASE I BOOK EXPLOITATION

659

MARGULIS, U.S.S.R.

Bibergal', Anatoliy Viktorovich and Margulis, Usher Yakovlevich

Atomnyy vzryv i nekotoryye voprosy protivatomnoy zashchity (Nuclear Explosion and Some Problems of Atomic Defense) Moscow, Medgiz, 1958. 68 p. 100,000 copies printed.

ED.: Miklashevskiy, V. Ye.; Tech. Ed.: Bul'dyayev, N. A.

PURPOSE: The pamphlet is intended to inform the general public of the characteristics of atomic bombs, to indicate the principal rules to be observed during an atomic attack and to point to possible defensive measures.

COVERAGE: The authors claim that in the Soviet Union the use of nuclear power is directed primarily towards constructive purposes, but so long as the use of atomic weapons is not prohibited and the danger of a new destructive war exists, effective measures must be undertaken in times of peace to meet the threat of a sudden atomic attack on large industrial centers. The authors assert that a widespread knowledge of the nature of an atomic war is of

Card 1/4

GORODINSKIY, Semen Mikhaylovich; PARKHOMENKO, Galina Maksimovna; LETAVET,
A.A., prof., red.; MARGULIS, U.Ya., red.; KNAKNIN, M.T., tekhn. red.

[Hygienic aspects of work with radioactive isotopes] Gigiena
truda pri rabote s radioaktivnymi izotopami. Pod red. A.A.
Letaveta. Izd. 3, dop. i ispr. Moskva, Gos. izd-vo med. lit-ry,
1958. 66 p. (MIRA 11:12)

1. Deystvitel'nyy chlen AMN SSSR.
(RADIOISOTOPES--SAFETY MEASURES)

MARGULIS, U.YA.

AUTHORS: Margulis, U.Ya., Khrustalev, A.V. 89-10-17/36

TITLE: Computation and Measuring of the γ -Field of a Plane Source
(Raschet i izmereniye γ -polya ot ploskogo istochnika)

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 10, pp. 338-341 (USSR)

ABSTRACT: The equations for the calculation of the dose of a plane source are derived theoretically and herefrom the isodose curves are formed. Further, measuring of the dose on a quasi-plane source (11 adjoining, active rods of a length of 1 m) are described with 418 mC. As the quintessence of all deliberations it is shown that an apparatus with a source consisting of 2 parallel plates with a distance of 25,44 cm and a total activity of $Q = 1000$ milligram - radium equivalent possesses an efficiency of 35,616 kg, where in the center of both plates there is a dose of 0,21 r/min. If, however, an apparatus is used for which an equivalent, cylindrical source of equal strength is used ($d = 25,44$ cm, length 100 cm), then only an efficiency of 16,18 kg exists, where, however, in the center of the source, there is a dose of 0,291 r/min. There are 7 figures.

SUBMITTED: October 26, 1956

AVAILABLE: Library of Congress

Card 1/1

BOCHVAR, I.A.; MARGULIS, U.Ya.

Perspectives of utilization of artificial radioactive isotopes in medical gammagraphy. Med.rad. 2 no.2:70-77 Nr-4p '57. (MIRA 10:7)
(ISOTOPES,
artif.isotopes in gammagraphy (Rus))
(GAMMA RAYS,
same)

AUTHOR
TITLE

APPROVED FOR RELEASE 06/20/2000 CIA-RDP86-00513R001032310019-1

PERIODICAL
ABSTRACT

Use of Strong Radiation Sources for the Sterilization of Grain
(Izpol'zovaniye moshchnykh istochnikov izlucheniya dlya obezzyazh-
eniya zerna /Russian)
Atomnaya Energiya, 1957, Vol 2, Nr 4, pp 376-384, (U.S.S.R.)

The authors of the paper under review describe an experimental arrangement for the sterilization of grain with the aid of the γ -radiation of Co^{60} . The radiation device has the shape of a hollow cylinder to the generatrix of which there are attached twenty radioactive bars of a total activity of 100,000 g equivalent radium. This device has water protection. The grain is automatically exposed to radiation. The operational capacity of the device amounts to 1.85 tons per hour. For the construction of industrial plants for the radioactive sterilization of grain the use of Co^{60} is uneconomical because of the high costs involved. Much more favorable is the utilization of fission products of uranium which are obtained from atomic industry. Because of the low specific activity of the fission products the selection of the most economical configuration of the radiation device is the most important problem. According to the computations, cellular (meshed) radiation devices are most favorable. The paper under review discusses three types of such cellular radiation devices, namely cylindrical, bar-shaped, and slot-shaped devices. According to the author of the paper, slot-shaped devices can be used most economically because they yield the highest output per unit volume of the device. The output of such a radiation device amounts to 31 tons per hour at a total activity of 3.72.10⁶ Curie. The relatively low

MARGULIS, V. YA.

"Use of Artificial Radioactive Isotopes in Gamma Therapy
and Medical Gamma Radiography" p. 117

Trudy Vsesoyuznoy Konferentsii po Meditsinskoy Radiologii
(Voprosy Gigiyeny i Dozimetrii) Medgiz, 1957. Moscow Russian, ok.

Proceedings of the All-Union Conference on Medical Radiology
(Hygienic and Dosimetric Problems).

MARGULIS, U. Ya

✓ Protection from x-rays and γ -radiations. A. V. Bitbergal and U. Ya. Margulis (Inst. Biol. Phys. Acad. Sci. U.S.S.R. (Moscow)). *Biofizika* 1, 63-75 (1956).--The nomograms and the method for their calcus. are given for the thickness of various protective materials, such as Pb, concrete, etc., against radiations from Co, Tm, Cs, Eu, Ir, and x-rays of different intensity and for the different distances, etc. The methods can be used for a variety of conditions.

A. V. Tolstouhov

GUSEV, Nikolay Grigor'yevich; MARGULIS, U.Ya., redaktor; SENCHILO, K.K.,
tekhnicheskij redaktor

[Manual on radioactive radiation and protective safeguards]
Spravochnik po radioaktivnym izlucheniam i zashchite. Moskva,
Gos. izd-vo med. lit-ry, 1956. 126 p. (MLRA 9:7)
(Radioactivity--Safety measures)

KOZLOVA, Anna Vasil'yevna, professor; VOROB'YEV, Yevgeniy Ivanovich;
KANAREVSKAYA, A.A., redaktor; MARGULIS, U.Ya., redaktor; SACHEVA,
A.I., tekhnicheskiy redaktor

[Clinical and therapeutic aspects of injuries caused by atomic
bomb explosions] Klinika i lechenie povrezhdenii voznikaiushchikh
pri vzryve atomnoi bomby. Moskva, Gos. izd-vo med. lit-ry, 1956.
94 p. (MLRA 9:11)

(ATOMIC BOMB--PHYSIOLOGICAL EFFECT)

RESULTS, U. 7/2.

Atomnaya Energiya i Protivoatomnaya Zashchita (Atomic Energy and Antiatomic Defense), by Ye. I. Vorob'yev and U. Ya. Margulis, edited by A. Ignat'yeva, Moscow, In-t San. Prosveshcheniya, 1956, 78 pp (lecturer's aid), from a standard card of the USSR State Library imeni V. I. Lenin, No 358.5)

"A popular discussion of the structure of matter, radioactivity, nuclear reactions, atomic energy, and use of atomic energy. The destructive effect of an atomic explosion, shock wave, and radioactive and light radiation are described together with protective measures. Separate chapters are devoted to first aid for atomic bomb explosion casualties, monitoring, decontamination, and protective shelters. Bibliography (22 titles). Instructions for the lecturer are given at the end of the book." (U)

Sum. 12 1961

ROSSI, B.; MARCULIS, U.Ya., redaktor; BELEN'KIY, S.Z., redaktor; TUMARKINA,
N.A., ~~tehnicheskii~~ redaktor.

[High energy particles] Chastitsy bol'shikh energii. Perevod s
angliiskogo. Pod red. S.Z.Belen'kogo. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1955. 626 p. [Microfilm] (MIRA 8:5)
(Particles, Elementary)

MARGULIS, U. Ya

MURRAY, Raymond L.; MARGULIS, U. Ya., redaktor; MAKHIMSON, I. G., redaktor;
STEPANOV, P. Ye., redaktor; GRIBOVA, M. P., tekhnicheskii redaktor

[Introduction to nuclear engineering. Translated from the English]
Vvedenie v iadernuiu tekhniku. Perevod s angliiskogo. Pod red.
P. E. Stepanova. Moskva, Izd-vo inostrannoi lit-ry, 1955. 408 p.
(MLRA 9:12)

(Nuclear reactors) (Nuclear engineering)

PALM, A.; BORISEVICH, Ye.S., [translator]; MARGULIS, U.Ya., redaktor;
SHAPOVALOV, V.I., tekhnicheskiiy redaktor.

[Recording instruments] Registriruiushchie samopishushchie pri-
bory. Perevod s nemetskogo E.S.Borisevicha. Moskva, Izd-vo in-
strannoi lit-ry, 1955. 272 p. (MIRA 8:4)
(Recording instruments)

MARGULIS, U.YA.

IVANOV, I.I.; MODESTOV, V.K.; SHUKKENBERG, Yu.M.; ROMANTSEV, Ye.F.;
VOROB'YEV, Ye.I.; MARGULIS, U.Ya., redaktor; POPRYADUKHIN, K.A.
tekhnicheskij redaktor.

[Radioactive isotopes in medicine and biology; a practical manual]
Radioaktivnye izotopy v meditsine i biologii; prakticheskoe
rukovodstvo. Moskva, Gos.izd-vo meditsinskoj lit-ry, 1955. 231 p.
(RADIOBIOLOGY) (MLRA 8:11)

Margulis, U. Ya.

MARGULIS, U. Ya., redaktor; NIKIFOROVA, A. N., tekhnicheskiy redaktor

[Nuclear power reactors and use of fission products; a collection of articles. Translated from the English] Energeticheskie iadernye reaktory i ispol'zovanie produktov deleniia; sbornik statei. Perevod s angliiskogo. Moskva, Izd-vo inostranoi lit-ry, 1955. 187 p.
(Nuclear reactors) (MLBA 9:2)

MARGULIS, U.Ya.,

POBEDINSKIY, M.N., professor, redaktor; KOZHEVNIKOV, V.P., professor, redaktor; KISELEV, P.H., professor, redaktor; DOLGOV, A.P., redaktor; MARGULIS, U.Ya., redaktor; BEL'CHIKOVA, Yu.S., ~~redaktor~~ tekhnicheskii redaktor.

[Use of radioactive phosphorus in the treatment of skin diseases]
Primenenie radioaktivnogo fosfora dlia lechenia kozhnykh zabolevani. Moskva, Gos.izd-vo meditsinskoi lit-ry, 1955. 171 p.
(MLRA 8:10)

1. Chlen-korrespondent AMN SSSR (for Kozhevnikov).
(PHOSPHORUS--THERAPEUTIC USE) (SKIN--DISEASES)

VOINOV, A.M.; GULENKO, G.B.; ISAYEV, B.M.; MARGULIS, U.Ya.

[Distribution of deep-seated telecurietherapeutic doses due to radioactive cobalt in a water-filled phantom] Raspredelenie glubinnykh doz v vodnom fantome ot telekiuriustanovki, zariazhennoi radioaktivnym kobal'tom. Moskva, Medgiz, 1955. 9 p.
(COBALT--THERAPEUTIC USE) (MIRA 11:4)

ISAYEV, B.M.; MARGULIS, U.Ya.

[Use of depth doses for spot sources of gamma rays from radioactive cobalt] Glubinye dozy dlia tochechnykh istochnikov gamma-luchei radioaktivnogo kopal'ta. Moskva, Medgiz, 1955. 6 p. (MIRA 11:4)

1. Iz Instituta biofiziki Akademii meditsinskikh nauk SSSR.
(COBALT--THERAPEUTIC USE)

MARGULIS, U. Ya.

USSR/Medicine - Radiology

Card 1/1

Authors : Isayev, B. M., and Margulis, U. Ya.

Title : Depth doses for point sources of gamma-rays of radioactive cobalt

Periodical : Vest Rentgen i Radiol 1, 68-74, 1954

Abstract : Studied the depths of penetration of gamma-rays in water and in air by means of a specially constructed apparatus consisting of a point source of gamma-ray radiation (Co^{60}) and a tank of water. Observed and plotted the depths of penetration for fields of 20, 50, and 100 cm^2 . Two drawings; six graphs; four tables. No references

Institution : Institute of Biophysics, Academy of Medical Sciences USSR

SOMMERFELD, Arnold; LIFSHITS, Ye.M. [translator]; MARGULIS, U.Ya., re-
daktor; KORNILOV, B.I., tekhnicheskiy redaktor.

[Mechanics of deformable bodies. Translated from the German] Me-
khanika deformiruemyykh sred. Perevod s nemetskogo E.M.Lifshitsa.
Moskva, Izd-vo inostrannoi lit-ry, 1954. 486 p. (MLRA 7:10)
(Elasticity)

MARGULIS, U. Ya.

BARINSKIY, R.L., redaktor; MARGULIS, U.Ya., redaktor; VILLENEVA, A.V.,
tekhnicheskiy redaktor

[Nuclear reactions at high energies. Collection of translations]
IAdernye reaktsii pri bol'shikh energiakh. Sbornik perevodov.
Moskva, Izd-vo inostrannoi lit-ry. Pt.2. [Nuclear reactions with
heavy particles] IAdernye reaktsii s tiashelymi chastitsami. 1954.
290 p. (MLRA 7:9)
(Nuclear reactions)

MARGULIS, U. IA.

Water test model distribution of depth doses from the
telecurie apparatus using radioactive cobalt. A.M. Voinov,
G.B. Gulenko, B.M. Isaev, U.IA. Margulis. Vest. rent. i rad.
no. 4:52-61 JI-Ag '53.

BARINSKIY, R.L., redaktor; MARGULIS, U.Ya., redaktor; MEL'NIKOVA, Ye.I.,
redaktor.

[High-energy nuclear reactions] Yadernye reaktsii pri bol'shikh energi-
iakh. Vol.1.[Photonuclear reactions; collection of translations]
Fotoladernye reaktsii. Sbornik perevodov. Moskva, Izd-vo inostrannoi
lit-ry. 1953. 227 p. (MLRA 7:2)

(Nuclear physics) (Photons)

MARGOLIS U YA.

8
IRML

177A9

USE OF RADIOACTIVE COBALT IN GAMMA-DEFECTOS-

COPY: A. V. Eibergal, V. V. Bochkarev, B. M. Isaev,
U. Ya. Margolis, and G. M. Frank. Akademiya Nauk S.S.S.R.,
1951. (In Russian) (Book on display at Geneva Conference)

Results of investigations carried out for the purpose of obtaining data for the practical application of artificial and radioactive cobalt in γ defectoscopy. Main problems connected with the use of Co^{60} in defectoscopy. Description of new devices developed for applying Co^{60} with an activity of up to 100 g-equiv. of radium in γ defectoscopy. New technical opportunities in this field. (publisher's note)

RMS

(1) Jan

PARTSHKOV, M.V., kand.ekonom.nauk; MARGULIS, T.L., kand.istor.nauk

On the road pointed out by the great Lenin. Elek.i tepl.tiaga 4
no.4:1-8 '60. (MIRA 13:6)
(Electrification)

MARGULIS, S.B.

Student conference on the physics of a lathe. Fiz. v shkole 22
no.2:59-60 Mr-Apr '62. (MIRA 15:11)

1. Shkola-internat g. Tul'chin.
(Lathes) (Physics--Study and teaching)

47-58-3-17/27

The Utilization of the Industrial Surroundings Found at a Boarding School
in the Teaching of Physics

of the theoretical teaching at school.

ASSOCIATION: Shkola-internat (The Boarding School),

AVAILABLE: Library of Congress

Card 2/2 1. Physics-Study and teaching

MARGULIS, S.B.

AUTHOR: Margulis, S.B. (Tul'chin)

47-58-3-17/27

TITLE: The Utilization of the Industrial Surroundings Found at a Boarding School in the Teaching of Physics (Ispol'zovaniye proizvodstvennogo okruzheniya shkoly-internata v prepodavanii fiziki)

PERIODICAL: Fizika v Shkole, 1958, Nr 3, pp 61 - 67 (USSR)

ABSTRACT: The author recommends the use of the industrial surroundings found at his boarding school for polytechnical instruction. The school has its own locksmith, carpenter and sewing work-shops; laboratories; 10 ha of land; a DT-14 tractor and other agricultural machines; a GAZ-51 truck; a radio broadcasting and receiving unit; a motion picture installation of the type "Ukraina"; a photo laboratory and a weather bureau. The school has central heating, its own electric power plant, a mechanized laundry, a kitchen with electric wiring and refrigerators. The students have all these possibilities to study physics and to simultaneously observe its practical application. Moreover, the author points out the importance of excursions to neighboring industrial enterprises for the better understanding

Card 1/2

MARGULIS, S.B.

School excursion to the LPU-1 steam power plant. Fiz.v shkole
16 no.5:38-43 S-0 '56. (MLRA 9:11)

1. 2-ya srednyaya shkola, g. Tul'chin, Vinnitskaya oblast'.
(Steam power-plants)

POMERATNSLV, V.V., doktor tekhn. nauk, prof.; MARGULIS, S.A., inzh.;
YEKIMOV, G.K., inzh.; SOSENSKIY, A.I., inzh.

Operation of the V.V. Pomerantsev high-speed TsKTI furnace on
waste wood. Energomashinostroenie 11 no.5:7-10 My '65.

(MIRA 18:6)

NECHAYEV, Ye.V., kand. tekhn. nauk; MARGULIS, S.A. inzh.

Furnaces with pneumatic and mechanical stokers and reverse
running chain grates. Energetik 12 no.1187-11 N '64
(MIRA 18:2)

MARGULIS, S.A., inzh.; BECHAYEV, Ye. V., inzh.

Testing the use of milled peat in forced-draft spreader stoker
furnaces. Torf. prom. 35 no. 4:7-9 '58. (MIRA 11:7)

1. Tsentral'nyy nauchno-issledovatel'skiy kotloturbinnyy institut
imeni Polzunova.

(Furnaces)
(Peat)

MARGULIS, R.Ya.

Biology of the reproduction of the species of the genus *Gammarus*
in the Velikaya Salma Strait. Trudy Belomor.biol.sta.MGU 1:231-
247 '62. (MIRA 16:1)

I. Kafedra zoologii bespozvonochnykh Moskovskogo gosudarstven-
nogo universiteta.

(Velikaya Salma Strait--Gammaridae)

MARGULIS, R.Ya.

Species of Amphipoda new for the fauna of the White Sea. Trudy
Belomor.biol.sta.MGU 1:143-145 '62. (MIRA 16:1)

1. Kafedra zoologii bespozvonochnykh Moskovskogo gosudarstven-
nogo universiteta.

(White Sea--Amphipoda)

MARGULIS, R.Ya.

Substation workers need special training. Elekt. i tepl. tiaga
5 no.10:38 0 '61. (MIRA 14:10)

1. Nachal'nik tyagovoy podstantsii Tavatuy Sverdlovskoy dorogi.
(Electric railroads—Substations)
(Railroads—Employees—Education and training)

MARGULIS, Pavel Semenovich; ROMANENKO, Nikolay Trofimovich; DROZHZHIN,
~~Yu. N., red.~~; SMIRNOVA, M. I., tekhn. red.

[Guide for practical laboratory work in heat engineering;
course on machinery] *Rukovodstvo k praktikumu po teplotekhnike*
(kursa mashinovedeniia). Moskva, Gos. uchebno-pedagog. izd-vo
M-va prosv., 1961. 60 p. diagra. (MIRA 15:2)
(Heat engineering)

MARS SL 2. P.E.

ABRAMOV, S.A., inzhener; VOROB'YEV, N.M., inzhener; GLAGOLEV, N.M., doktor
tekhnikeskikh nauk, professor; MEHLIS, P.M., inzhener; MARGULIS
P.S. kandidat tekhnicheskikh nauk; RISKIN, I.V., inzhener;
FUFRYANSKIY, N.A., doktor tekhnicheskikh nauk, professor

Selecting types of diesels for projected diesel locomotives. Vest.
TSHII MPS 16 no.2:11-18 Kr '57. (MLBA 10:4)
(Diesel locomotives)

DUKHINA, T.Kh. [deceased]; MARGULIS, P.M.

"Ekonomicheskii listok" helps to reveal resources. Mashino-
stroitel' no.2:37 F '64. (MIRA 17:3)

MARGULIS, S.M.; USTYKOV, I.E.

Thermoplastic sheaths made of polyvinyl chloride and manganese
oxide. Otkrytiye 30 no.112/2-73 '65.

(MIRA 18.12)

i. Ukrainskiy nauchno-issledovatel'skiy institut khimicheskoy

L-26945-55

ACCESSION NR: AP5005024

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

SUBMITTED: 00

ENCL: 00

SUB CODE: MM,MT

NO REF SOV: 009

OTHER: 003

ATD PRESS: 3189

Card 3/3

L 26945-65

ACCESSION NR: AP5005024

cylindrical samples made by compacting powdered mixtures and firing them at 1700C. Other tests were carried out with samples in the shape of crucibles, tips, or cubes made by casting or compacting (cubes), followed by firing at 1650—1750C. The coefficient of thermal expansion of the α -alumina (corundum)-base samples was significantly decreased; hence, the thermal stability was increased by increasing the aluminum titanate content. Microscopic phase analysis confirmed this finding. Great importance was attached to the fact that the thermal expansion in the 100—400C range of the samples with 90% aluminum titanate, 9% alumina, and 1% aluminum phosphate was the same as in pure aluminum titanate. This was considered as an indication of the possibility of making other compositions of the three materials, which would have a zero or near-zero coefficient of thermal expansion in various temperature ranges up to 500C. The tests of the corundum-base products showed that compositions with 20—25% aluminum titanate displayed high refractoriness (about 1930C), good compressive strength at subzero temperatures, and high thermal stability in molten metals. The aluminum titanate-based products had also high compression strength at subzero temperatures and high thermal stability, including that in molten metals. Orig. art. has: 5 figures and 3 tables. [JK]

Card 2/3

L 26945-65 EWP(e)/EPA(s)-2/EWT(m)/EWP(w)/EPP(n)-2/EWA(d)/EPR/EPA(w)-2/T/EWP(t)/
EWP(b) Pa-4/Pt-10/Pu-4/Pab-10 IJP(c) WH/WB/JD/JG/WB

ACCESSION NR: AP5005024

S/0131/65/000/002/0023/0027

AUTHOR: Margulis, O. M.; Kamenetskiy, A. B.

67
56
B

TITLE: Properties of aluminum titanate- and alumina-base products

SOURCE: Ogneupory, no. 2, 1965, 23-27

TOPIC TAGS: refractory compound, alumina, corundum, aluminum titanate, refractory product, thermal property, mechanical property

ABSTRACT: A study has been made of the effect of aluminum titanate and aluminum phosphate additions on linear thermal expansion, porosity, compression strength, and thermal stability of pure alumina and alumina products. The possibility was tested of making refractory products with low thermal expansion, a characteristic of aluminum titanate, and sufficiently high compression strength, which is low in pure aluminum titanate products. Aluminum titanate powder was synthesized from pure α -alumina and titania, and mixed with pure alumina or $Al_2O_3 + 1\% TiO_2$ in various ratios. Aluminum phosphate (0.5-5%) was added to some of the mixtures. The coefficient of thermal expansion (in the 20-1200C range) and the phase composition were determined in

Card 1/3

L 12160-66

ACC NR: AP6000758

form of cubes with an edge length of 300 mm and prisms 140 mm long with a cross section of 15 x 8 mm and were annealed with the coverings. The article gives tables with the results of tests on volumetric weight, porosity, compression yield point at 1650°C, and bending strength at 1400°C. Analogous tests were made on coverings made of magnesium oxide. In this case, the test samples contained 96.7% magnesium oxide and 2.5% calcium oxide. Orig. art. has: 1 figure and 3 tables.

SUB CODE: 07,11/ SUBM DATE: 00/ ORIG REF: 008/ OTH REF: 000

HW
Card 2/2

L 12160-66 EWP(e)/EWT(m)/EPF(n)-2/T/EWP(t)/EWP(b) IJP(c) JD/NW/JG/WH

ACC NR: AP6000758

UR/0131/65/000/012/0042/0045

13
B

AUTHOR: Margulis, O.M.; Usatkov, I.F.

ORG: Ukrainian Research Institute for Refractories (Ukrainskiy nauchno-issledovatel'skiy institut ogneporov)

TITLE: Thermocouple coverings made of zirconium dioxide and magnesium oxide

SOURCE: Ogneupory, no. 12, 1965, 42-45

TOPIC TAGS: refractory oxide, zirconium compound, magnesium compound, thermocouple, high temperature material

ABSTRACT: Object of the work was the development of thermocouple coverings which can operate at temperatures of 1900 and 2400°C. The zirconium dioxide used had a content of zirconium dioxide plus hafnium dioxide not less than 96%, and was stabilized with calcium oxide in the form of chalk. To improve thermal stability, the thermocouple coverings were made of a mixture of the cubic (stabilized) and the monoclinic (unstabilized) forms. The best thermal stability was shown by coverings made of mixtures containing 40-50% fused monoclinic zirconium dioxide or 20-30% annealed zirconium dioxide. The coverings were poured into gypsum forms and were dried in the forms to a moisture content of 0.5 to 1.0%. They were then annealed under annealing conditions given in a table. To test the mechanical properties of the coverings, samples were prepared in the

Card 1/2

UDC: 666.76:536.532

ACCESSION NR: AP4042633

fired at 1600C. The tensile strength of the dried samples was 59.5 g/sq.cm. Shear strength data showed that binders based on aluminophosphate cement, refractory corundum parts reliably to graphite even after a 15-hour firing in an electric furnace up to 2000C. The effect of an aluminophosphate binder on the properties of corundum samples, using alumina mixed with 1% TiO₂, was also studied and the compressive strength was determined at 300, 1200 and 1600C. Aluminophosphate binders were found to promote sintering, increase the strength after drying and heat-resistance, and did not decrease the temperature of deformation. The increase in heat resistance is associated with a decrease in the thermal expansion coefficient and possibly with the presence of glassy films which absorb the stresses at sharply changing temperatures. Addition of 1% aluminum phosphate to the corundum mass improved sintering, thermal resistance and compressive strength, and decreased the coefficient of thermal expansion with the simultaneous retention of the main properties. The volatility of P₂O₅ does not affect the serviceability of the products and cements. "Microscopic studies were carried out by N. V. Gul'ko." Orig. art. has: 3 tables.

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

SUBMITTED: 00
 SUB CODE: MT

Card 2/2

NO REF SOV: 005

ENCL: 00
 OTHER: 017

ACCESSION NR: AP4042633

S/0131/64/000/007/0329/0332

AUTHOR: Margulis, O. M.; Kamenetskiy, A. B.

TITLE: Use of aluminum phosphate as a binder for refractory corundum products and cements

SOURCE: Ogneupory*, no. 7, 1964, 329-332

TOPIC TAGS: refractory material, aluminum phosphate, corundum, cement, binder, alumina bonding strength, shear strength, firing, phosphorus pentoxide, refractory cement

ABSTRACT: The possible use of aluminum phosphate as a binder for making corundum products, especially parts of thermocouples, and for cementing parts to graphite and to steel was investigated. An aluminophosphate bonding agent with $Al_2O_3:P_2O_5=1:3.5$, density 1.57 g/cc, was used. Storage in a closed vessel for a month did not affect this binder. The effect of particle size on the stability of the binder was measured with a photoelectric nephelometer. It was found that the filtrate of an aluminophosphate binder contained suspended particles with a size of 370-600 μ , most of them being 370-420 μ . An aluminophosphate binder (density 1.58 g/cc, viscosity 7.8 cp) mixed with finely ground alumina in a ratio of 1:1.3 (resulting density = 3.59 g/cc) was then used for cementing samples which were

Card 1/2

ACCESSION NR: AP4038902

SUBMITTED: 00

SUB CODE: MM

DATE ACQ: 05Jun64

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ENCL: 00

OTHER: 001

Card 3/3

ACCESSION NR: AP4038902

No. 6). Both oxides were chemically analyzed and tested for porosity, compressive strength, and bending strength. Their heat absorption and their coefficients of heat conductivity and of thermal expansion were determined. The two materials were also checked for chemical interaction when in contact with each other for 40 minutes at 1800C. These last tests proved that magnesium oxide should be separated from zirconium dioxide by gaskets of strontium zirconate or calcium zirconate. Thermal stability was studied at various rates of cooling, various lengths of heating-cooling cycles, and at velocities of gas flow up to 100 m/sec. In this work the sponge insulation rings, though resistant to heat, were found to suffer from erosion under the flow of hot gases. Rings made of magnesium oxide did not decrepitate even after 400 cycles in the 1900-1500C heating-cooling range, but when using them the furnace lining had to be made of the same material. Sponge made of magnesium oxide was found inferior to that made of zirconium dioxide. The authors recommend that magnesium oxide be used for manufacturing objects subjected to temperature changes of 400C for long periods and to changes of 900C for shorter periods. N. V. Gul'ko performed the petrographic investigations. Orig. art. has: 2 photographs and 3 tables.

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

Card 2/3

ACCESSION NR: AP4038902

S/0131/64/000/005/0206/0209

AUTHORS: Margulis, O. M.; Stovbur, A. V.

TITLE: Thermal stability of products made of oxides

SOURCE: Ogneupory*, ²¹no. 5, 1964, 206-209

TOPIC TAGS: zirconium dioxide, magnesium oxide, thermal stability, refractory material, compressive strength, bending strength, heat exchange, heat insulation, corrosion resistance, erosion resistance

ABSTRACT: Objects made of zirconium dioxide and magnesium oxide were tested in temperatures up to 1900C. Zirconium dioxide blocks (produced from molten material with an addition of 8% of CaO) were ground to 2μ , freed of iron, and mixed with monoclinic zirconium dioxide. Test specimens were pressed from material mixed with water-diluted molasses. Magnesium oxide briquettes (burned at 1750C) were dry ground to 10μ and were processed as above. Experimental refractory columns were built up of rings 15 and 25 mm in external diameter and 10 mm high. Their wall thicknesses were 3, 3, and 2 mm. The specimens were held in rings 75 mm in diameter, 10 mm thick, and 26 mm high. Heat-insulating rings were prepared of zirconium dioxide sponge according to the method described by A. A. Pirogov (Ogneupory*, 1962,

Caed 1/3

ACCESSION NR: AP4013186

(the increase of its content from 15 to 25% lowered the strength of the material at room temperature); 4) thermal stability of large items made of zirconium dioxide was affected by the shape and the size of the item; 5) the introduction of the monoclinic zirconium considerably increased the thermal stability of large items in comparison to those made only of isometric ZrO_2 . Orig. art. has: 4 tables and 1 figure.

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

SUBMITTED: 00

DATE ACQ: 02Mar64

ENCL: 00

SUB CODE: ML

NO REF SOV: 005

OTHER: 000

Card 2/2

ACCESSION NR: AP4015329

measuring temperatures in vacuum. When the thermocouples were placed near the water-cooled parts of the oven, their jackets were destroyed by the abrupt temperature differences. The MgO coverings can be used in taking measurements under argon at 2400C for a period of 5 hours, while the ZrO₂ jackets withstand a temperature of 2400C for several minutes and may be used for extended periods at 1900C in vacuum, under nitrogen and under argon. The long coverings had to be attached to graphite supports to prevent their bending at high temperatures. Orig. art. has: 2 tables and 3 figures.

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

SUBMITTED: OO

DATE ACQ: 10Feb64

ENCL: OO

SUB CODE: ML

NO REF SOV: CO3

OTHER: OO1

Card 2/2

86-00513R001032310019-

ACCESSION NR: AP4013186

AUTHORS: Margulis, O. M.; Usatkov, I. F.; Kamenatskiy, A. B.

TITLE: Large items of high thermal stability made of zirconium dioxide

SOURCE: Ogneporya, no. 2, 1964, 63-67

TOPIC TAGS: zirconium dioxide, thermal stability, refractory characteristic, refractory material, refractory shape effect, refractory size effect

ABSTRACT: It was previously established that the thermal stability of refractory materials made of zirconium dioxide increased if certain amounts of isometric and monoclinic ZrO₂ were melted and mixed together. The present work was carried out in order to determine the optimal quantities of the monoclinic part and the optimal grain sizes of both parts. The experiments showed that: 1) thermal stability of large items made of zirconium dioxide increased with the use of 0 to 60 μ fraction of isometric ZrO₂; 2) the monoclinic zirconium (introduced in insignificant quantities) gave best results when its grain sizes were smaller than 2 μ but even with 60 -μ grains its thermal stability and the deformation temperature under load remained satisfactory; 3) 15% of coarse monoclinic zirconium gave the best results

S/0131/64/000/001/0024/0028

ACCESSION NR: AP4015329

AUTHORS: Margulis, O. M.; Usatkov, I. F.; Kamanetskiy, A. B.

TITLE: Refractory materials for the protection of thermoelectrodes used in high-temperature measurements

SOURCE: Ogneupory*, no. 1, 1964, 24-28

TOPIC TAGS: refractory material, zirconium dioxide, magnesium oxide, thermocouple protective jacket, VR 5/20 thermocouple, OPPIR-09 pyrometer, Tamman electrical oven, TVV-2M oven, high-temperature oven

ABSTRACT: A procedure for the production of thermocouple jackets is described. These jackets made of zirconium dioxide and magnesium oxide were up to 600 mm long and 22 mm in diameter. Despite the differences in their compositions, it has not been possible to determine which material is the more advantageous. The tests were carried out in a Tamman electrical oven, a TVV-2M oven, and in high-temperature ovens. It was established that thermocouple coverings described here should not be used under reducing conditions. Tests carried out at 1×10^{-3} mm Hg pressure under argon in a TVV-2M oven showed that the MgO jackets should not be used for

Cont 1/2

L 19712-63

ACCESSION NR: AP3003205

0.001-torr vacuum and in hydrogen. VR-5/20^{ph} and VR-15/20^{ph} thermocouples^o were made from these 0.34-mm wires. The MgO caps and beads were tested separately for five hours in argon at 2,400C; they also worked in induction furnaces at temperatures up to 2,000C without appreciable vaporization or volatilization; however, in 10⁻⁴ -torr vacuum at temperatures over 1,600C, a "considerable wear was observed." Orig. art. has: no figure, formula, or table.

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

SUBMITTED: 00

DATE ACQ: 22Jul63

ENCL: 00

SUB CODE: IE

NO REF SOV: 001

OTHER: 002

Card 2/2

L 19712-63 EPR/ENT(1)/EPF(c)/EPF(n)-2/EWP(q)/ENT(m)/BDS/T-2/ES(v)/
ES(s)-2/ES(w)-2 AFFTC/ASD/SSD Ps-4/Pr-4/Pu-4/Pe-4/Pab-4/Pt-4 WW/NH

ACCESSION NR: AP3003205

S/0115/63/000/006/0021/0022

AUTHOR: Margulis, O. M.; Usatkov, I. F.; Kamenetskiy, A. B.; Lakh, V. I.;
Stadny*k, B. I.

TITLE: Refractory insulation of thermo-electrodes used in measuring high
temperatures

SOURCE: Izmeritel'naya tekhnika, no. 6, 1963, 21-22

TOPIC TAGS: insulation, refractory insulation, high-temperature
measurements, VR-5 alloy, VR-15 alloy, VR-20 alloy

ABSTRACT: As porcelain caps and beads slipped over thermocouples withstand
only temperatures of up to 1,000-1,500C, other materials — MgO, Al₂O₃, and
ZrO₂ — were used for developing refractory insulation for high-temperature
thermocouples. Wires from tungsten-rhenium alloys containing 5% (VR-5),
15% (VR-15), and 20% (VR-20) rhenium were annealed at 1,400-1,650C in

Card 1/2

Tips for immersion type...

S/131/62/000/012/002/004
B117/B186

1700 - 1750°C. Their thermal inertia of 15 sec corresponded to that of quartz glass (12 - 20 sec). There is 1 table.

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



Card 2/2

MARGULIS, O.M., inzh.

Technology of manufacturing high density products from oxides.
Met. i. gornorud. prom. no.2:42-46 Mr-Ap '62. (MIRA 15:11)

- 1. Ukrainskiy institut ogneporov.
(Refractory materials--Density)

00513R001032310019

S/131/62/000/012/002/004
B117/B186

AUTHORS: Margulis, O. M., Romanchenko, K. G., Stovbur, A. V.,
Basalova, G. K.

TITLE: Tips for immersion type thermocouples made from zirconium dioxide of increased resistance to heat

PERIODICAL: Ogneupory, no. 12, 1962, 552 - 554

TEXT: Basing on previous experience (O. M. Margulis et al., Stal', 1957, no. 8; Ogneupory, 1959, no. 4; Sbornik rabot UNIIO, 1960, no. 3) tips for thermocouples were made from molten zirconium dioxide (mixture of cubic and monoclinic modifications) by ceramic casting and freeze-drying. Dross with pH = 1-2, 20% moisture, and 8 - 10 poise viscosity was used for casting. The tips produced by the two methods and annealed in periodic furnaces with petroleum heating at 1750°C had a porosity of 1 - 30%. Without protective coating they withstood 2 - 6 immersions in molten chromium at 2000 - 2040°C. Tests carried out under operating conditions in induction and steel arc showed that tips produced by the two methods withstood 2 - 3 immersions in molten chromium and allowed of making temperature measurements at

15 2630

29426

S/081/61/000/017/078/166
B101/B102

AUTHOR: Margulis, O. M.

TITLE: Thermal stability of refractories from pure oxides

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1961, 335. abstract
17K 206 (Sb. nauchn. tr. Ukr. n.-i. in-t ogneporov, no. 4,
1960, 50-62)

TEXT: The author presents several methods for determining the thermal stability of refractories from pure oxides. It is shown that the thermal stability of the products depends on their structure. Increased thermal stability is observed in refractories containing two or more types of crystals. The difference in the coefficients of thermal expansion of crystals results in the formation of microfissures, which allows the individual grains to expand more freely on heating. In addition, the extension of cracks is impeded. [Abstracter's note: Complete translation.]

X

Card 1/1

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S/137/61/000/004/003/039
A056/A101

Products of fused zirconium dioxide ...

stabilized at a prolonged heating at 1,200°C as CaO and MgO. At 1,500°C the destabilization is accompanied by an increase in the strength of the product. There are 30 references.

V. O.

[Abstracter's note: Complete translation]

X

Card 2/2

Card

Dense Products of Magnesium Oxide With Increased Thermal Stability

S/131/60/000/03/009/013
B015/B005

ground, in the addition of highly disperse α -Al₂O₃, the pressing of unfinished pieces from "pseudogranular masses", and the two-stage burning at 1450 and 1750° in capsules. There are 4 tables and 11 references, 6 of which are Soviet.

ASSOCIATION:

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



052310019

15.2230

AUTHORS:

Margulis, O. M., Stovbur, A. V., Basalova, G. K.

TITLE:

Products of fused zirconium dioxide with high temperatures resistance

PERIODICAL:

Referativnyy zhurnal, Metallurgiya, no. 4, 1961, 6, abstract 4B34
("Sb. nauchn. tr. Ukr. n.-i. in-t ogneporov, 1960, no. 3(50), 153-171)

TEXT:

A method of preparing crucibles and products presenting a far better thermal resistance usually out of ZrO₂ has been developed. The augmentation of thermal resistance for the crucibles and sinterings of ZrO₂ is not determined by the amelioration of stabilization of ZrO₂ in cubic shape, but by the use of the mixture (1/1) of the cubic Z and the monoclinical modification of melted ZrO₂. A rapid rise of strength at high temperatures and a reduction of thermal dilatation affect positively the increase of thermal resistance of the latter. In this case, the microstructure and the thin crystalline structure are apparently of decisive significance. Petrographic and roentgenographic methods were used to establish the destabilization of the cubic form of ZrO₂.

S/131/60/000/03/009/013
B015/B005

15(2)
AUTHORS:

Margulis, O. M.
Romanchenko, K. G., Stovbur, A. V.

TITLE:

Dense Products of Magnesium Oxide With Increased Thermal
Stability

PERIODICAL:

Ogneupory, 1960, Nr 3, pp 132-137 (USSR)

ABSTRACT:

In this paper the authors describe an economic procedure for the manufacture of fully sintered products of magnesium oxide with admixtures and at practically attainable temperatures. Table 1 indicates the chemical composition of the initial raw material and of the admixtures. Tables 2-4 show the characteristics of the magnesium-oxide samples with admixtures burnt at 1750°. The preparation of raw materials is thoroughly described, and the method of Grebenyuk (UNIIO) is referred to. In conclusion, the authors state that a procedure was worked out for the manufacture of plates with a porosity of 1-3% made of magnesium oxide with spinel linkage. They offer increased thermal stability and considerable durability at high temperatures. The peculiarity of this procedure lies in the regularity of this procedure and finely at high temperatures and finely

The Terminal Pieces of Immersion Thermocouples

SOV/131-59-4-4/16

given in the table and the typical cuts in figure 4. Conclusions: The increased thermal stability of terminal pieces of technical alumina is guaranteed by the presence of two corundum crystal types: fine isometric and coarse prismatic.

Further the technology of production of this corundum crystallization is given and recommended to all works producing refractories in order to supply metallurgical plants with suitable terminal pieces for thermocouples. There are 4 figures, 1 table, and 5 references, 4 of which are Soviet.

ASSOCIATION:

Ukrainskiy nauchno-issledovatel'skiy institut ogneporov (Ukrainian Scientific Research Institute of Refractories), Podol'skiy zavod ognepornykh izdeliy (Podol'skiy Works for Refractories)

Card 2/2

15(2)

AUTHORS:

Margulis, O. M., Romanchenko, K. G., SOV/131-59-4-4/16
Rutman, D. S., Vinogradova, L. V.

TITLE:

The Terminal Pieces of Immersion Thermocouples (Nakonechniki
dlya termopar pogruzheniya)

PERIODICAL:

Ogneupory, 1959, Nr 4, pp 157-161 (USSR)

ABSTRACT:

Immersion thermocouples with terminal pieces of quartz can be used only one time up to a temperature of 1600°. The platinum - platinum-rhodium thermocouples are further rapidly worn out. In the Podol'sk plant of refractories experiments with terminal pieces of technical alumina are carried out, the technology devised by UNIIO serving as a basis (Fig 1). A set of 500 terminal pieces was tested in the works "Elektrostal'" by representatives of manufacturers and consumers, of the Ukrainian and All-Union Institutes of Refractories, and the Tsentral'naya laboratoriya avtomatiki Ministerstva stroitel'stva RSFSR (Central Laboratory of Automation of the Ministry of Building of the RSFSR). The laboratory of the Podol'sk works performed petrographical investigations in which N. V. Gul'ko assisted (Ref 1, Figs 2 and 3). The influence of burning and of an addition of 1% TiO₂ was investigated. The results are

Card 1/2

On the Destabilization of the Cubic Form of Zirconium Dioxide SOV/20-121-3-35/47

MgO where the monocline ZrO_2 modification was found (< 1%) was an exception. Thus the destabilization of the cubic form proceeds very slowly. The results are shown on tables 1 and 2. They reveal that the degree of decomposition of solid solutions $CaO - ZrO_2$ and $MgO - ZrO_2$ depends upon the composition of the additions and on the concentration of the solid solution. The thermal treatment (melting or sintering) has hardly any effect on the destabilization. The investigations carried out show how complicated the mechanism of decomposition of the mentioned solid solutions is and point to the need for further investigations. There are 2 tables and 12 references, 8 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut ogneuporov, g. Khar'kov (Khar'kov, All-Union Scientific Research Institute of Refractory Materials)

PRESENTED: March 22, 1958, by N.V. Belov, Member, Academy of Sciences, USSR
Card 3/4

On the Destabilization of the Cubic Form of Zirconium
Dioxide

SOV/20-121-3-35/47

material from ZrO_2 , it ought to be stabilized in cubic modification by various additions, which crystallize also in a cubic system. Furthermore, these additions ought to have a higher percentage of heteropolar bindings than ZrO_2 itself (Refs 5). According to the latest papers this is true of CaO and MgO (Refs 5,7). Contrary to the leading opinions it was found that ZrO_2 stabilized in the mentioned way is destabilized by heating for a long duration between 1100 and 1400° (Refs 5, 8,9). For the stabilization of ZrO_2 the authors used 10 to 30 mol % CaO and 14 to 35 mol % MgO. The mixture was melted in the arc furnace and ceramically sintered in a forge with crude oil heating for 6 hours at a temperature of 175°. It could be petrographically and roentgenologically proved that ZrO_2 + CaO and MgO were represented in cubic form after both melting and sintering. After having been moisted with water a < 2 μ fine powder was pressed under a pressure of 600 kg/cm² into cubes and cylinders and baked at 1750° for 6 hours. In all cases the composition of the phases was microscopically determined to be cubic. The formula with 10 mol % CaO and 14 mol %

Card 2/4

AUTHORS: Margulis, O. M., Gul'ko, N. V. SOV/20-121-3-35/47

TITLE: On the Destabilization of the Cubic Form of Zirconium Dioxide
(K voprosu o destabilizatsii kubicheskoy formy dvoukisi tsirkoniya)

PERIODICAL: Doklady Akademii nauk SSSR, Vol. 121, Nr 3,
pp. 523 - 526 (USSR) 1958

ABSTRACT: Zirconium dioxide has a very high melting temperature (2700°). It is, however, not possible to produce refractory material from it since it is decomposed in the course of baking. The constants of natural zirconium dioxide - of baddeleyite - are mentioned (Refs 1,2). In heating ZrO_2 undergoes polymorphic transformations from a monoclinic into a tetragonal modification (at about 1000°, Refs 3,4; to be quite exact, at 950 - 1150°, Ref 5). This transformation is reversible and is accompanied by large volume changes; this is also the cause of decomposition in the case of baking. At certain conditions of thermal treatment the trigonal modification can also be produced (according to Ref 6). The conditions of existence at this form have hitherto not been completely determined. In order to produce refractory

Card 1/4

SOV/68-58-11-10/25

An Improvement in the Durability of Coke Oven Roofs
in Table 2. It is concluded that in future silica and
chamotte bricks (of plastic formation) should be
replaced by kaolinite chamotte bricks.
There are 2 tables and 4 references, all Soviet.

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

Card 2/2

SOV/68-58-11-10/25

AUTHORS: Margulis O.M., Gin'yar E.A., and Sakovskiy D.Ya.

TITLE: An Improvement in the Durability of Coke Oven Roofs
(Uluchsheniye stoykosti svodov koksovykh pechey)

PERIODICAL: Koks i Khimiya, 1958, Nr 11, pp 26-29 (USSR)

ABSTRACT: The durability of various types of refractory bricks used in the edges (pusher and coke side) of coke oven roofs was investigated. As these bricks are submitted to continuously acting sharp temperature variations from 500-600 to 1000-1100°C the durability of silica bricks is low. The All-Union Scientific Research Institute for refractories produced and tested various types of refractory bricks, mainly chamotte based on kaolinite (Table 1). Chamotte was prepared from pure kaolinite by a plastic method and fired to 1500°C with 8 hours soaking at the final temperature. The composition of refractory bricks 85% of crushed chamotte (with a considerable proportion of coarse fractions 6-3mm 21%, 3-2mm 14.8% and 2-1mm 9.4%) and 15% of kaolinite. The bricks were made by pneumatic stamping, dried and fired at 1460°C. Properties of the bricks are given in Table 1 and their behaviour in service...

Card 1/2

MARGULIS, O. M.

87(1) TRADE & BOOK EXCHANGE 807/1108
Opatoviy AYu obratnyy metalurgii; obratnyy metalurgii (Refraction in Reverse Metallurgy) (Collection of Articles) Moscow, Metallurgizdat, 1976.
Bravins ally izmereniye. 4,000 copies printed.

M. I. P. I. Gervich, Englebert M. of Publishing House: I. P. Kuznetsov; Prof. M. I. A. Z. Buzant.

REFRAC: This book is intended for engineers and technicians working in reverse metallurgy.

CONTENTS: The book consists of 20 articles on the development and use of the refractory in the Soviet metallurgical industry. B. I. Gervich, in the first paper, presents the prospects for development and research projects in the sector for the period 1979-1985. An extensive development of refractory materials is part of the USSR. In general, the articles deal with recent developments in basic and acidic refractories for blast and open hearth furnaces and for the lining of ladles and special equipment used in continuous casting and in vacuum treatment of steel. A. S. Shrevalov discusses the technology of manufacturing magnesia and refractory refractories that previously employed lime brick and clay slaty. Several authors state that good results were obtained with

Cont 1/3

refractory-slag brick and with bricks made of magnesia and chromite compounds. The application of new refractories, insulating materials, high-temperature refractories, and refractory coatings, combined with advanced technologies in lining furnaces, are said to have more than doubled the time between relinings and to have increased the degree of contact between the refractory lining and the furnace walls. O. M. Margulis and A. O. Shrevalov discuss the use of "tagged atoms" to determine the degree of contact of steel by refractory-lining particles. I. S. Kozlov describes the production of refractories by the auxiliary pressing method employed at the Khabarovsk plant, and I. S. Kuznetsov and V. D. Zhigalov cover the use of lightweight lime bricks in industrial furnaces. The last paper, written by I. S. Kuznetsov, compares and evaluates the physical properties and service life of clay-slaty bricks, ferrite bricks, lime bricks and bricks with high alumina content. Graphs, diagrams, and photographs accompany the papers. For references, see Table of Contents.

TABLE OF CONTENTS

Refractories in Reverse Metallurgy (Cont.)	807/1108
Solomonovich, S.A., and I.A. Gerasimov. Technology of Manufacturing High-Density and Dimensionally Stable Alumina-Silicate Refractories for Blast Furnace Lining.	142
[There are 13 references, 6 of which are Soviet, and 7 English]	
Shabaly, G.Y., and E.P. Vasil'yev. Service Life of Ladle Lining for Pouring Steel [13 Soviet references]	148
Bruma, D.S., L.Y. Vologodskaya, E.A. Kravtsov, and D.B. Kuznetsov. Refractory High Alumina Lining-Lining Brick and Slag-Resistant Bricks of Mullite-Chromite Composition [5 Soviet references]	173
Margulis, O.M., and A.O. Shrevalov. The Use of Tagged Atoms to Determine the Contact of Refractory Constituents of Steel With Refractory Lining [There are 12 references, 9 of which are Soviet, and 3 English]	178
Kozlov, I.S. Manufacture of Steel-Pouring Bricks by the Auxiliary Pressing Method in the Refractory Shop of the Khabarovsk Metallurgical Combine and the Results of Fractional Application in Metallurgy	186
Cont 1/3	

(11)

MARGULIS, O. M.

10/26/57

Changes in the phase composition of an industrial refractory brick from primary kaolin after service. L. I. Karyakin and O. M. Margulis (Inst. Refractory Materials, Kharkov). *Ognetekstrem* 21, 123-8 (1957). Cf. C.A. 51, 6879f. Brick of 100% Polozhak kaolin is produced from 86% calcined chamotte and 14% kaolin binder. It is used in the steel industry, especially in kilns with a service temp. of 1350-1450° in which they are exposed to Fe oxide scale dust. While the unchanged cooler parts of the brick, after 1 year of service, showed the normal microscopic features with mullite needles, quartz, cristobalite, and glass, in the hotter zones near the scale-covered surface there is a peculiar short-prismatic "isometric" form of mullite crystals with $\gamma = 1.600-1.620$, and $\alpha = 1.648-1.676$, systematically increasing evidently by increasing contents in Fe₂O₃. Towards the hot surface the crystals grow from 16 to 40 μ in length, embedded in an orange-yellow glass with $n = 1.546-1.562$. In this glass appears a lead, optically normal and fine-acicular, mullite. The chem. analysis of isolated isometric mullites showed Al₂O₃ 69.85, Fe₂O₃ 2.46, and SiO₂ 29.07%. The (610) interference line in the x-ray diagram, which has normally a $d = 1.1866$ A., is increased by the Fe₂O₃ content to 1.1879 A. Evidently, for the formation of this isometric mullite a temp. above 1400°, and the presence of Fe₂O₃ scale, together with a long period of heat exposure as it is given in the metallurgical kilns and combustion chambers, are necessary. W. J. Mitchell

PM

133-8-8/28

Sheaths for immersion thermocouples. (Cont.)

magnesite or zirconia coating can withstand 6-13 immersions. In Fig.2 a view of sheaths after 4 hours' immersion is given. It is concluded that using the above sheaths the control of metal temperature either by repeated immersions or by a continuous (4 hours) immersion is possible, but a proper design of the thermocouple itself should be developed.

There are 2 figures and 4 references, including 1 Slavic.

ASSOCIATION: All-Union Scientific Research Institute of Refractories. (Vsesoyuznyy N.-I. Institut Ogneuporov).

AVAILABLE: Library of Congress
Card 2/2

133-8-8/28

AUTHORS: Margulis, O.M., Romanchenko, K.G., and Getman, I.A.

TITLE: Sheaths for immersion thermocouples. (Nakonechniki dlya termopar pogruzheniya).

PERIODICAL: "Stal'" (Steel), No.8, 1957, pp.714-715 (USSR).

ABSTRACT: Methods of producing refractory thermocouple sheaths for immersion thermocouples resistant to thermal shock and able to withstand not only a large number of short immersions but also prolonged immersion, were investigated. T.K.Kazanskaya (laboratory assistant) participated in the investigation. It was established that the best method of manufacturing is by freezing a layer of a mixture of refractory powder with paraffin and oleic acid on to an immersed rod (at 50-70 C). It is stated that the appropriate compositions for manufacturing various refractory sheaths were established but no details given. As all refractory sheaths produced cracked on immersion, two types of protective coatings based on metallurgical magnesite and zirconia stabilised with lime were developed. The size distribution required for the above two materials are given. As a binder, an alcoholic sulphite lyle was used. Tests carried out in a high frequency furnace at 1600-1700C indicated that sheets from technical corundum coated with a

Card 1/2

MARCELIS, O.M.

Examination of the distribution of small additions of radioactive calcium to plastic masses. E. V. Levintovskii, A. N. Lyulichev, O. M. Maraulskii, and D. M. Shakhin (Inst. Refractory Materials, Khar'kov), *Doklady Akad. Nauk SSSR*, 240-241 (1967); *ibid.*, 242-243. — The distribution of active traces method is used for the indexing of pressed refractory bricks by using a $Ca^{45}Cl_2$ contg. $CaCl_2$ soln. in the batch water and its pptn. by NH_3 oxalate or soda to avoid a diffusion of the indicator to the brick surface. For cylindrical samples of different brick compps. (90% kaolin + 10% Chasov-Yar clay; 50% kaolin + Chasov-Yar clay; and 40% Al_2O_3 + 50% Chasov-Yar clay) the distribution of Ca^{45} on the surface and in the interior was carefully detd. by common Geiger-counter methods. There is only a slight enrichment on the surface if 1% of the oxalate-precipitator soln. is applied. The batches (400 kg. in the industrial expts.) were indicated with the intensities of 500 mc./ton in a $CaCl_2$ soln. with 0.04 mg./ml. and a bath minimum of 30%. A sufficiently homogeneous distribution was realized for the Ca^{45} in the plastic brick masses after a twice- or thrice-repeated reprocessing by tamping, and in the hydraulic press, if drying is strictly avoided. W. Kiesel

9
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MARGULIS, O. M.

Protecting tubes for immersion thermocouples. O. M. Margulis, K. G. Romanchenko, and I. A. Getman. *Sov. J. Appl. Phys.* 17, 714-16 (1957). Coating conventional alumina-protecting tubes with a slurry made of sulfite liquor and metallurgical magnesite (100% under 0.5 mm., 50% under 0.088 mm.) or ZrO₂ (100% under 0.5 mm., 70% under 0.088 mm.) permitted them to stand a 4-hr. immersion in molten steel at 1600-1700°. With their use temp. equil. is reached in 40-60 sec. as compared with 20 sec. for quartz tubes.

J. D. Getman

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131-12-8/9

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

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

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

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MARGULIS O.M.

131-12-8/9

AUTHOR: Fel'dgandler, G.G.

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

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

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

Card 1/2

The Wear of Refractories in Various Zones of the Blast Furnace

131-12-5/9

shows the working results obtained by refractory bricks in the various zones. The aforementioned investigations confirmed the necessity of using refractories of high specific weight and volume stability at high temperatures. As a way for a further increase of the strength of the lining the use of carbon materials is mentioned. There are 1 figure, 5 tables, and 17 references, 8 of which are Slavic.

ASSOCIATION: Khar'kov Institute for Refractories (Khar'kovskiy institut ogneuporov)

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