[illegible], I.[illegible] [illegible], [illegible] [illegible]BAL, N.T.
[illegible]K, M.I.

Analysis of the composition of coexisting biotites and hornblendes in the rocks of the Ukrainian Shield. Geol. zhur. 25 no.3:[illegible]-17 '65. (MIRA 18:11)

1. Institut geologicheskikh nauk AN UkrSSR.

SHCHERBAK, O.V.

New method of electrochemical separation of [illegible]

[illegible] Tekh. [illegible] 1956

[illegible] for the [illegible] copper [illegible] glass con- [illegible] Hg [illegible]

[illegible] that are [illegible]

wetted, so they float on the Hg. The electrolyte and the upper part of the Hg are poured into separate containers. The floating minerals are washed off with water. The submerged minerals are treated with 1 [illegible] H_2SO_4 or 4-6% [illegible]

of ores, concentrates, of crushed rock and for sepn. of pyrite ... from the heavy fraction of sedimentary rock. A. P.

Shcherbak O. V.

The sorption of lead on different rocks and its possible role in formation of deposits. E. V. Rozhkova and O. V. Shcherbak (All-Union Inst. Mineral Deposits, Moscow). *Izvest. Akad. Nauk S.S.S.R., Ser. Geol.* 1956, No. 2, 18-24. —Report of results of a study of sorption of Pb in different media from very dil. solns. of its salts. Lignite, schungite, kaolinite, ferric hydroxide, and iron ore were used as the sorbents under static conditions, and lignite, montmorillonite, kaolinite, and dolomite were employed under semidynamic conditions. On the basis of expts. made, it is concluded that lignite and dolomite had the largest sorption capacities. Sorption isotherms of Pb on different sorbents are shown. There are tables of data on the sorption of Pb under static conditions, Pb content by sections in the different sorbents, distribution of Pb in the different sorbents according to layers, sections, and content. A schematic diagram of the app. for expts. on Pb sorption is shown. Gladys S. Macy

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(2)

ROZHKOVA, Ye.V.; SHCHERBAK, O.V.

Sorption of lead in various rocks and its probable functions in ore formation. Vop.min.osad.obr. 3/4:132-143 '56. (MLRA 9:11)

1. Vsesoyuznyy institut mineral'nogo syr'ya, Moskva.
(Sorption) (Lead)

137-1957-12-23020

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 22 (USSR)

AUTHOR: Shcherbak, O. V.

TITLE: A New Method of Electrochemical Segregation of Minerals (Novyy metod elektrokhimicheskoy separatsii mineralov)

PERIODICAL: V sb.: Sovrem. metody mineralog. issledovaniya gorn. porod, rud i mineralov. Moscow, Gosgeoltekhizdat, 1957, pp 103-114

ABSTRACT: An investigation of the possibility of utilizing the electrical conductivity of metals for their electrochemical separation in laboratories. Methods of electrochemical-magnetic separation of minerals are described, along with electrochemical methods of separation at a Hg-cathode. Also described is an electrochemical separator and a mercury electrochemical separator with a semi-permeable partition (glass or ceramic).

A. Sh.

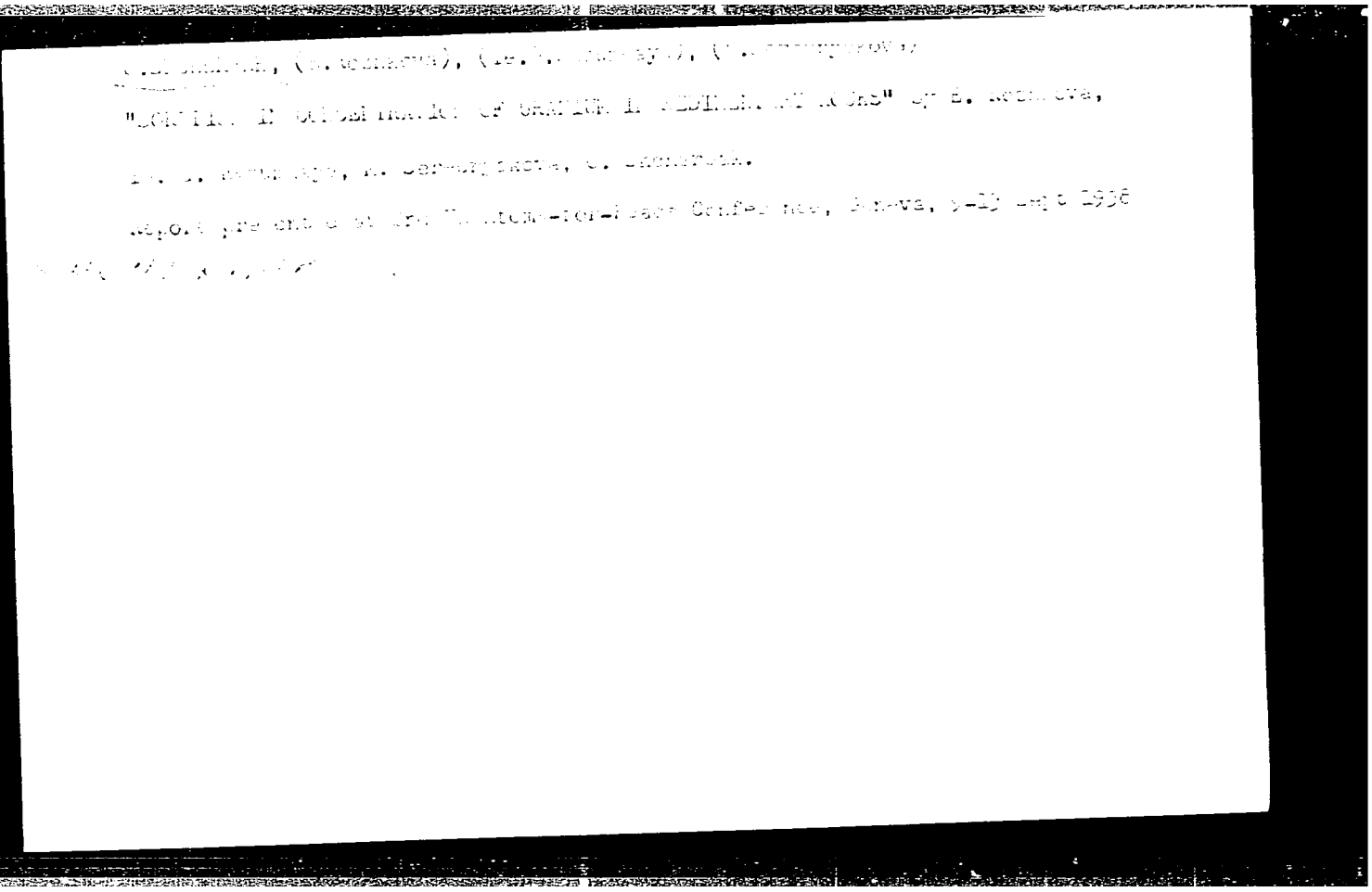
1. Metallurgy-USSR 2. Separators-Electrochemical 3. Minerals-Separation

Card 1/1

SHCHERBAK, O.V.

Formation and accumulation of lead sulphide under natural conditions [with summary in English]. Geokhimiia no.8:723-729 '57. (MIRA 11:2)

1. Vsesoyuznyy institut mineral'nogo syr'ya, Moskva.
(Lead sulfide)



AUTHOR: Shcherbak, O.V. SOV/32-24-9-42/53

TITLE: New Mechanical Grinders (Novyye mekhanicheskiye istiratели)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 9, pp 1154-1155 (USSR)

ABSTRACT: The mechanical grinders 'SMB' and 'SMM' (big and small) are designed for grinding rocks, ores, minerals and other materials with a hardness of 6,5 - 7 (according to Moos). The operation of the mechanical grinders is based on a new kind of power transmission from the electromotor to the pestle. The latter moves radially and circularly from the edge of the plate to the center, and vice versa, rotating around its own axis at the same time. The grinder is described and shown in a figure. Samples of different hardness, like granite, quartz, basalt, diabase, marble etc. were used for the laboratory and industrial tests of these grinders. The experiments showed that a certain ratio of the sieve fractions is obtained already after 3,0 - 3,5 minutes with weighed portions of 20 g, and after 10 - 12 minutes with weighed portions of up to 100 g. Within this time practically the whole material is ground to -200 mesh (76 μ). The two types of grinders mentioned above began to be produced in series at the sistema Ministerstva geologii i okhrany nedr SSSR (Organization of the

Card 1/2

New Mechanical Grinders SOV/32-24-9-42/53

Ministry of Geology and the Protection of Mineral Resources of the USSR) in 1958. There is 1 figure.

ASSOCIATION: Vsesoyuznyy institut mineral'nogo syr'ya (All-Union Institute of Mineral Raw Materials)

Card 2/2

SHCHERBAK, O.V.

21(4) PHASE I BOOK EXPLOITATION SOV/2714

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Doklady sovetskikh uchenykh; yadernoye goryucheye i reaktornyye metally. (Reports of Soviet Scientists; Nuclear Fuel and Reactor Metals) Moscow, Atomizdat, 1959. 670 p. (Series: Its: Trudy, vol. 3) 8,000 copies printed.

Ed. (Title page): A.A. Bochvar, Academician, A.P. Vinogradov, Academician, V.S. Yemel'yanov, Corresponding Member, USSR Academy of Sciences, and A.P. Zefirov, Doctor of Technical Sciences; Ed. (Inside book): V.V. Pereversev and G.M. Pchelintseva; Tech. Ed.: E.I. Mazel'.

PURPOSE: This volume is intended for scientists, engineers, physicians, and biologists working in the production and peaceful application of atomic energy; for professors and students of schools of higher technical education where the subject is taught; and for people interested in atomic science and technology.

COVERAGE: This is volume 3 of a 6-volume set of reports on atomic energy, presented by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy, held in Geneva from September 1 to 13, 1958. Volume 3 consists of two parts. The first part, edited by A.I. Zubov, is devoted to geology, prospecting, concentration and processing of nuclear source material. The second part, edited by G.L. Zvetev, includes 27 reports on metallurgy, metallography, processing technology of nuclear fuels and reactor metals, and neutron irradiation effects on metals. The titles of the individual papers in most cases correspond word for word with those in the official English language edition on the Conference proceedings. See SOV/2081 for the titles of the other volumes of the set.

Kochkova, Ye.V., Ye.G. Razumnaya, M.B. Serebryakova, and O.V. Shcherbak. The Role of Sorption in the Process of Uranium Concentration in Sedimentary Rocks (Report No. 2059) 15

Rafal'skiy, R.P. The Experimental Investigation of the Conditions of Uranium Transport and Deposition by Hydrothermal Solutions (Report No. 2067) 33

Nekrasova, Z.A. Form Occurrence of Uranium in Some Coals (Report No. 2082) 54

Gritsayenko, G.S., L.N. Belova, R.V. Getseva, and K.T. Savel'yeva. Mineralogical Types of Oxidation Zones of Hydrothermal Uranium and Uranium Sulfide Deposits in the USSR (Report No. 2155) 69

Kushnarev, I.P., L.I. Lukin, B.L. Rybalov, Ye. P. Sonyushkin, and L.V. Khoroshilov. General Laws Governing the Localization of Uranium Mineralization and the Basic Types of Structures of Hydrothermal Uranium Deposits (Report No. 2492) 85

Card 3/11

ROZHKOVA, Ye.V.; YERSHOVA, K.S.; SHCHERBAK, O.V.

New devices for dielectric separation of minerals. Min.syr'e no.4:148-151 '62. (MIRA 16:4)
(Mineralogy) (Dielectrics)

ROZHKOVA, Ye.V.; SHCHERBAK, O.V.; SAAKYAN, V.M.

Role of sorption in the zinc concentration in sedimentary rocks. (MIRA 16:4)
Min.syr'e no.6:61-74 '62.
(Sorption) (Ore deposits) (Rocks, Sedimentary)

SHCHERBAK, O.V.

Mechanism of the accumulation of germanium in iron ores and coals. Min.syr'e no.6:101-113 '62. (MIRA 16:4)
(Germanium) (Iron) (Coal)

SHCHERBAK, P.

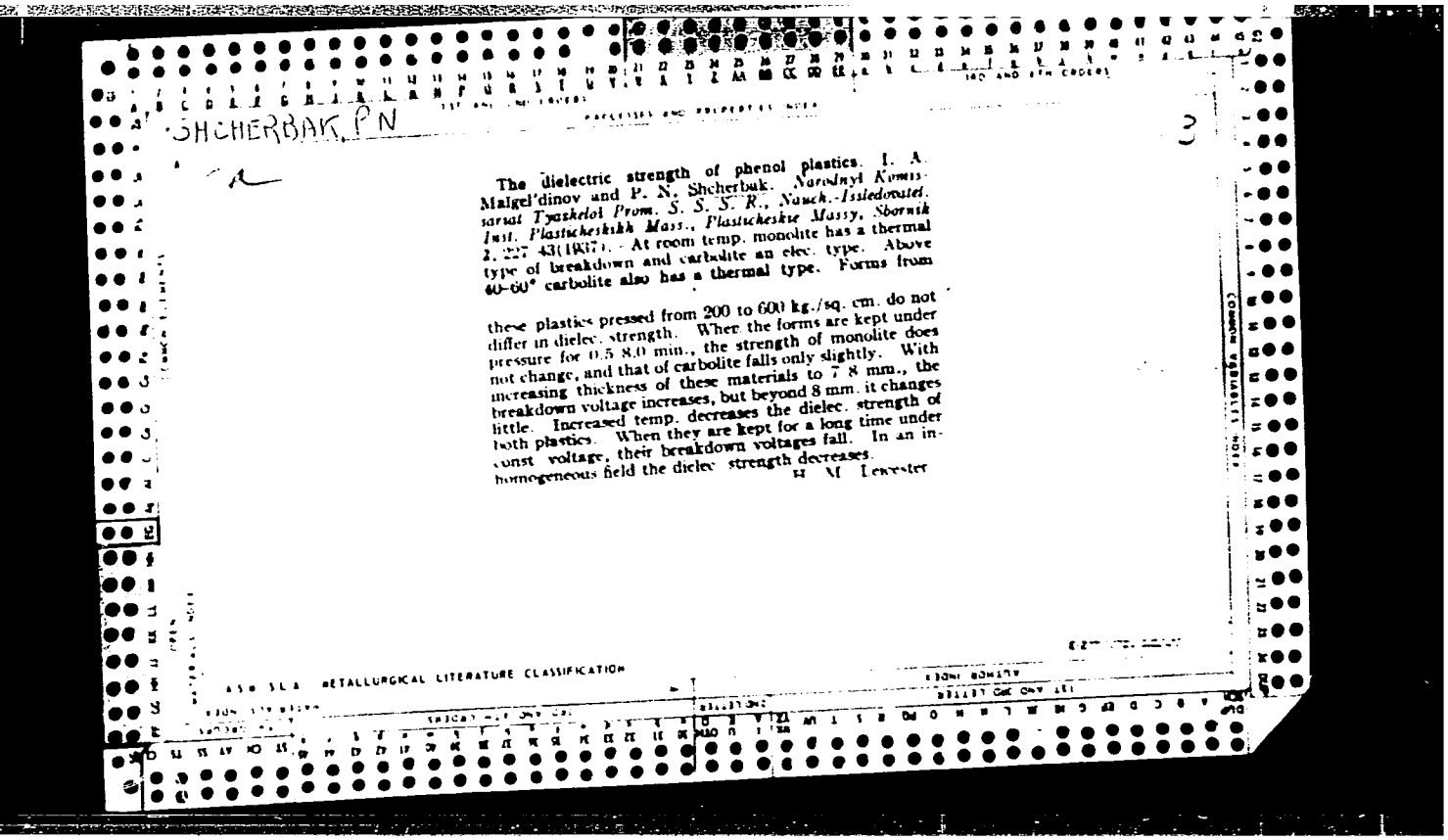
At the gas pipelines. Okhr.truda i sots.strakh. no.5:36-40 N '58. (MIRA 12:1)

1. Starshiy inzh. svarochno-montazhnogo tresta Glavgaza SSSR.
(Gas, Natural--Pipelines) (Industrial hygiene)

GOLDOVSKIY, A.M., doktor tekhnicheskikh nauk, professor; MATSUK, Yu.P., inzhener; SHCHERBAK, P.A.

Studying the operation of screw presses; duration of the pressing action in screw presses. Masl.-zhir.prom. 18 no.5:4-6 My '53. (MLRA 6:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov. (Power presses) (Oils and fats)



SHCHERBAK, P N

The dielectric strength of phenol plastics. I. A. Malgel'dinov and P. N. Shcherbak. *Narodnyi Komissariat Tyazkeloi Prom. S. S. S. R., Nauch.-Issledovatel. Inst. Plastucheskikh Mass., Plastucheskie Massy, Sbornik* 2, 227-43(1937).—At room temp. monolite has a thermal type of breakdown and carbolite an elec. type. Above 40–60° carbolite also has a thermal type. Forms from these plastics pressed from 200 to 600 kg./sq. cm. do not differ in dielec. strength. When the forms are kept under pressure for 0.5–8.0 min., the strength of monolite does not change, and that of carbolite falls only slightly. With increasing thickness of these materials to 7–8 mm., the breakdown voltage increases, but beyond 8 mm. it changes little. Increased temp. decreases the dielec. strength of both plastics. When they are kept for a long time under const. voltage, their breakdown voltages fall. In an inhomogeneous field the dielec. strength decreases.

H. M. Leicester

METALLURGICAL LITERATURE CLASSIFICATION

USSR. Physics - Dielectric properties

Card 1/2 Pub 153 - 7/19

Author : Erlikh, I. M.; Shcherbak, P. N.

Title : Dielectric properties of the homologous series of acetals of polyvinyl alcohol

Periodical : Zhur. tekh. fiz., 25, No 9 (September), 1955, 1575-1580

Abstract : Previously (P. P. Kobeko, G. P. Mikhaylov, Z. I. Novikova, i id., 14, 24, 1944) it was discovered that two relaxational maxima of dielectric losses exist in polar polymers, one of these maxima (dipole-elastic) lying in the interval of temperatures of the elastic state and the other (dipole-radical) lying near temperature of the solid state of the polymer. G. P. Mikhaylov (ibid., 21, 11, 1951) investigated these maxima in detail and established that stretching of polymers changes the relaxation time of the dipole-elastic maximum while no essential change in relaxation time of dipole-radica maximum is observed. In the present work the authors trace the influence of structure of polymers upon the character of these maxima in the homologous series of acetals of polyvinyl alcohol, and study the temperature and frequency dependences of dielectric losses ($\tan\delta$) and dielectric permeability (epsilon) in the frequency interval $5 \cdot 10$ to $5 \cdot 10^5$ cycles. They conclude that increase in the polar radical in the series by the group CH_2 lowers the temperature of maximum of dipole-elastic losses, which is similar to lowering of heat capacity of the acetals, and that the presence in acetals of polyvinyl alcohol of iso-compounds leads to increase in the temperature

PD-3132

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of softening of the polymer. The considerable agreement of described phenomena in homologous series of acetals of polyvinyl alcohol and esters (ethers) of metacrylic acid gives reasons for the authors' assumption that similar laws hold for other polymers also. They thank Professor G. P. Mikhaylov, who advised the present investigations, and also I. M. Fingauz, A. N. Sverdlova and O. F. Utkina, who prepared the synthesis of the acetals. Seven references: e.g. P. P. Kobeko, N. M. Kumshatskaya, Sbornik posvyashchennyy 70-letiyu akad. A. F. Ioffe [Symposium devoted to 70th year of Acad. A. F. Ioffe]

Institution : --

Submitted : April 27, 1955

Problems of the Standardization of Electrical Test Methods for Plastics

cular Compounds of the AS USSR) have developed testing methods based on the application of coaxial eayities. /Ref 2/ The authors stress the deficiency of the existing standards for testing dielectrics and recommend the introduction of US methods in the conditioning of plastics and electric insulation materials. It has become necessary to work out standards for measuring the basic electric characteristics within the following range and under the following conditions: specific electric resistance volume (surface) up to 10^{18} - 10^{19} ohm.cm (ohm); a specific inductive capacitance and tg δ in the frequency range of 50-10^9 cycles with a permissible error of tg δ for higher grade dielectrics not exceeding $\pm$ 0.00005; the electric strength not only at commercial frequency, but also on direct current in high-frequency fields and pulsation currents.

Card 2/3

SOV/28-59-12-6/27

Problems of the Standardization of Electrical Test Methods for Plastics

The serial production of appropriate apparatus should be organized. There are 3 references, of which 2 are American, and 1 Soviet.

Card 3/3

ANDREYEVA, I.N.; ARKHIPOVA, Z.V.; VESELOVSKAYA, Ye.V.; LEVINA, A.A.; ANTOKOL'SKAYA, Ye.M.; LAZAREVA, N.P.; SAZHIN, B.I.; KHIN'KIS, S.S.; SHCHERBAK, P.N.; GERBIL'SKIY, I.S.; LYANDZBERG, G.Ya.; PARAMONKOVA, T.V.; PECHENKIN, A.L.; YEGOROV, N.M., red.; SHUR, Ye.I., red.; FOMKINA, T.A., tekhn.red.

[Low-pressure polyethylene] Polietilen nizkogo davleniia. Izd.2., ispr. i dop. Leningrad, Gos.nauchno-tekhn.izd-vo khim.lit-ry, 1960. 95 p. (MIRA 14:1)

1. Nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass (for all, except Yegorov, Shur, Fomkina).
(Polyethylene)

KUVSHINSKIY, Ye.V.; BESSONOV, M.I.; ZAKHAROV, S.K.; SIDOROVICH, A.V.; GUBENKO, A.B.; PANFEROV, K.V.; GUL', V.Ye.; LOMAKIN, V.A.; TSIPES, L.Ya.; CHERNYAKINA, A.F.; SAKHNOVSKIY, Z.L.; SHCHERBAK, P.N.; AL'SHITS, I. Ya.

Answers to the inquiry concerning the determination of the physical and mechanical properties of plastics. Zav.lab. 26 no.1:?-28 '60. (MIRA 13:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR. (for Kuvshinskiy Bessonov, Zakharov, and Sidorovich). 2. TSentral'nyy nauchno-issledovatel'skiy institut stroitel'nykh konstruktsiy (for Gubenko and Panferov). 3. Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.Lomonosova (for Gul'). 4. Moskovskiy gosudarstvennyy universitet imeni M.V. Lononosova. Problemnaya laboratoriya fiziko-mekhanicheskich svoystv polimerov (for Lomakin). 5. Zavod "Karbolit" (for TSipes, Chernyakina and and Sakhnovskiy). 6. Gosudarstvennyy nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass (for Shcherbak). 7. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (for Al'shits)

(Plastics--Testing)

15 (8), 28 (5)

S/032/60/026/01/008/052
B010/B123

AUTHOR: Shcherbak, P. N.

TITLE: Answers to the Inquiry About the Test Methods of the Physical and Mechanical Properties of Plastics

VI

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 26, Nr 1, pp 23 - 27 (USSR)

ABSTRACT: It is recommended to carry out physical and mechanical tests of plastics according to the determination of the elasticity modulus on the basis of bending deformation at low temperatures which was worked out in the NIIPP-Leningradskiy nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass (NIIPP-Leningrad Scientific Research Institute for Polymerisation Plastics). A footnote of the editor (of the present publication) says that the coefficient determined by the test method which is described by the author, cannot be regarded as elasticity modulus, but that it still can be used for a suitable evaluation of the material properties. This modulus characterizes the behaviour of plastic dependence on temperature under various conditions of application and indirectly makes

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possible investigations of the structure, as e.g. the determination of the degree of cross-linking, crystallization and branching of a polymer. The dynstat is considered to be a very interesting apparatus as it renders tests of microsamples possible. In the physico-mechanical laboratory of the above-mentioned institute the following micro methods are used: 1) Brinell hardness test (specimens with surfaces of 15x10 mm^2), 2) Vick heat resistance test, 3) Determination of the bending strength limit by the dynstat and 4) Determination of specific toughness by the dynstat (specimens 15x10x3.5 mm^3). For determining tensile strength and relative elongation the method of microsample-testing worked out in the laboratory of Professor Ye. V. Kuvshinskiy in the Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High Molecular Compounds of AS USSR). For determining the relationship of physical and mechanical properties of plastics and structures, characteristics can be used, as e.g. the above-mentioned determination of the elasticity modulus according to NIIPP (worked out by N. A. Maygel'dinov), the determination of heat resistance according to NIIPP (by the apparatus of S. N. Zhurkov) and the

determination of the tensile strength limit. At present, no standard methods for testing durability and fatigue endurance exist, some valuable investigations, however, in this field were carried out by the Corresponding Member of the AS USSR, Professor S. N. Zhurkov. In NIIPP the fatigue phenomena of polymers are investigated by electrical methods with MDP-, MLYe-1-bridges, KV-1 and UK-1 chambers and ID-1 and 36-I apparatus. A viscosity control of the plastic melt (polyethylene etc) is especially important for fixing processing conditions. For this purpose an apparatus developed in otdel fiziko-khimicheskikh issledovaniy plastmass NIIPP (the department for physico-chemical investigations of plastics NIIPP), which has been manufactured in series. For a microstructural analysis of crystalline polymers the x-ray method can be applied, the URS-50I apparatus enabling quicker determinations than the older URS-70 apparatus. Apparatus of the type URS-50I are manufactured in zavod "Burevestnik" (plant "Burevestnik") of the Leningradskiy sovnarkhoz (Leningrad sovnarkhoz) Determinations of heat resistance according to Martens and Vick are carried out in automatic apparatus manufactured in series in the East-German

plant VEB for material testing machines. It is mentioned that already during the 11th All-Union Conference on High Molecular Compounds held in Moscow in July 1959 the difficulty in determining the heat resistance of plastics was stressed. In the present institute the tensile strength and bending strength are determined by the same machine of the type RMI-250A of the Leningradskiy zavod "Metallist" (Leningrad plant "Metallist").

ASSOCIATION: Gosudarstvennyy nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass (Scientific State Research Institute for Polymerisation Plastics)

S/[illegible]/60/[illegible]/[illegible]/[illegible]
B016/B002

AUTHORS: Shcherbak, P. N., Sazhin, B. I.

TITLE: On the Investigation Methods of the Electrical Strength and Specific Resistance of Plastics

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 26, Nr [illegible], pp [illegible]

ABSTRACT: The authors explain the methods used at present for the determination of the electrical strength E and specific resistance (volume resistivity ρ_v, surface resistivity ρ_s, and [illegible] resistivity) of plastics and make some suggestions for the improvement of the relevant GOST standards. The preliminary conditions for the samples [illegible] drawn [illegible] GOST [illegible] made more precise, as has been done in ASTM D 618 and [illegible]. The value ρ_v is determined according to GOST [illegible] 10^{14} ohm cm. The range of measurement may however [illegible] to 10^{16} ohm cm, if the more sensitive galvanometers of the type M 107/1 (Ref 6) and M21 are used and some modifications are carried out. For the determination of higher resistivities a number of electrometers (Ref 9) as well as tera-ohmmeters (Ref [illegible]) have been developed. The TO 1 tera-ohmmeter permits measurements

Card 1/3

between 10^{12} and 10^{16} ohms. The more sensitive [illegible] meter up to $2 \cdot 10^{17}$ ohm cm. Since electrometers are not produced serially, some instruments were tested in the NIIPP and it was found that further improvements are necessary to measurements up to 10^{18} ohm cm. It is pointed out that determinations [illegible] by means of the method of spontaneous discharge and the method recommended by GOST 6433-52 need not yield identical results. On account of the suspension of the standard GOST [illegible] 1957 there is at present no standard method available for the investigation of plastic coatings by breakdown tests by a pulsed current. This method must however of necessity be standardized. The use of electrostatic voltmeters of the types S[illegible] and 3 kv) and S-96 (7.5 and 30 kv for high voltage measurements permits an improvement in the measuring methods for breakdown tests of thin samples. The instruments of the type AMI-60 (60 kv alternating current as well as AMI [illegible] current up to 50 kv) destined for the investigation of [illegible] may be used. The standard GOST [illegible] for the investigation of

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25(5)

S/048/60/024/02/028/057
B019/B060

AUTHORS: Berlin, B. I., Shchukin, F. M.

TITLE: General Methods for Testing the Dielectricity Constants and the Tangent of the Dielectric Loss Angle of Plastics

PERIODICAL: Zavodskaya Laboratoriya, 1960, Vol. 26, Nr 2, pp. 188 - 192 (USSR)

ABSTRACT: In connection with the rapid development of the plastic dielectric production envisaged in the Seven-year Plan it has been necessary also to establish satisfactory methods for testing the dielectricity constant ε and the tangent tg δ of the dielectric loss angle. A table gives a survey of the various possibilities of arranging the electrodes and samples as well as of the formulas for determination. Then various details to be borne in mind during the tests as well as corrections are mentioned, and data from the ASTM D150-54T standard are cited. When using flat samples with guard rings a correction must be made in GOST 6433-52 (in accordance with the ASTM D150 standard) with regard to the effective surface of the measuring electrode. When determining the sample capacity the electrode and wire capacities must frequently be taken

Card 1/3

Modern Methods for Testing the [illegible] Constants and the Tangent of the [illegible] Angle of Plastics

[illegible]/60/086/02/028/057
[illegible]

into consideration. For this purpose it is recommended to calibrate with samples of a material with a known dielectric. city constant (e.g. polyethylene). Due attention must be directed to Soviet standards in edge formation. In tests with frequencies above 10^6 cycles per second it is absolutely necessary to make corrections with regard to induction. In determining tgδ the capacity, conductivity, and resistance of the wires must also be taken into consideration. Measurements under operating conditions (frequency 50-60 cycles per second) are carried out according to GOST and ASTM with a high voltage Schering bridge. For measurements of ε and tgδ according to GOST 10067 balanced bridges are used with sound frequencies of 50...1000 cycles per second, but these bridges are not manufactured. For frequencies of 10^2 - 10^4 cycles per second low voltage Schering bridges such as the MMB-1 bridge may be used. According to the GOST proposal (Ref 11) ε and tgδ may be measured at 10^6 cycles per second either by means of a KV-1 [illegible] and their gauge or by a YV-1 meter according to the

Card 2/3

Modern Methods for Testing the Dielectric Insulator S/033/60/026/02/028/057
and the Tangent of the Dielectric Loss Angle of Ebonite B010/B009

precision method. Measurements according to the resonance method may be made at 0.1 - 10⁸ cycles per second with micrometric electrodes (Fig. 1 and GSS-6 or GSS-17 generators and wavemeters of type 5-10). In this case 28IM measuring amplifiers may be used. In the case of high precision measurements of ε and tgδ at 10⁶ to 10⁸ and frequencies of 50-10⁷ cycles per second, such as are described in reference 3, a GSS-12 generator, BVD wavemeter, AO-1 step attenuator and 28IM measuring amplifier may be used. The existing measuring methods for ε and tgδ are insufficient, and it will be necessary to develop testing methods for 10⁶-10⁸ cycles per second with a maximum error of tgδ determination of ± 0.0005. There are 1 figure, 1 table and 13 references, 7 of which are Soviet.

Card 3/3

SHCHERBAK, P.N.

Electric testing of thin films made of high-molecular compounds.
Standartizatsiia 25 no.9:38-40 S '61. (MIRA 14:9)
(Solid film—Testing)

S/028/62/000/001/002/002
D228/D301

AUTHOR: Shcherbak, P.N.

TITLE: Development of a standard for high-pressure polyethylene

PERIODICAL: Standartizatsiya, no. 1, 1962, 54-55

TEXT. In considering this question the author first briefly reviews the electrical and other properties of high-pressure polyethylene (I). Besides its high electroinsulation characteristics which make it very suitable for use in the cable industry, I is widely employed as a substituent for vitreous materials in agriculture and the building industry. Reference is made to a conference at the Nauchno-issledovatel'skiy institut polimerizatsionnykh plastmass (Scientific Research Institute of Polymerization Plastics) convened to investigate problems relating to the standardization of the method of I's electrical testing. It is noted that the [illegible]6433-52 (GOST 6433-52) specification is unsuitable for determining the electric resistance and tangent of the dielectric-loss angle of I, polytetrafluoroethylene, polystyrol, and other non-polar

Card 1/2

Development of a standard for ...

polymers at high and superhigh frequencies. This is also the case with the latter quantity's determination at frequencies of 10^6 c/s as laid down in "GOST 9141-59 (GOST 9141-59). Hydrowave equipment has, however, recently been developed by G.P. Mikhaylov, D.A. Dmitrochenko, and Shevelev [Abstracter's note: No initials given] at the Institut vysokomolekulyarnykh soyedineniy (Institute of High-molecular Compounds) AN SSSR (AS USSR) for determining tan δ and ε at frequencies of up to 500 mc/s. The results obtained from a number of factory tests suggest that this apparatus should be put into general production. There are 9 Soviet-bloc references.

Card 2/2

Methodical problems ...

S/191/62/000/010/009/010
B101/B186

method is that it requires long-term measurements and capacitance measurement. Introduction of a correction factor reduces the time of measurement to 1 min. The P-525 (R-525) Schering bridge of the Kiyevskiy zavod "Tochelektropribor" (Kiyev Plant "Tochelektropribor") is used to measure tan δ and ε at mains frequency. Tan δ and ε are measured with the МИЕ-1 (MIYe-1) measuring bridge at audio frequencies of 400 - 10,000 cps, and with the ИПП-2М (IPP-2M), ИПП-1М (IPP-1M), and КВ-1 (KV-1) apparatus at radiofrequencies. Directions are given for improving the accuracy of KV-1 measurements. The breakdown voltage is measured with a АМИ-60 (AMI-60) device up to 60 kv a-c, and with an АКИ-50 (AKI-50) device up to 50 kv d-c, or with a АИИ-70 (AII-70) device up to 70 kv a-c. Data for carrying out series of tests are given. There are 5 figures.

Card 2/2

SHCHERBAK, P.N.

Standardization of the methods of electric testing of plastics. Standartizatsiia 26 no.4:56-57 Ap '62. (MIRA 15:3)
(Plastics--Testing)

S/191/63/000/003/008/022
B101/B186

AUTHORS: Fadeyeva, A. V., Lel'chuk, Sh. L., Shcherbak, P. N., Kurzhenkova, M. S., Sergun'ko, A. M., Kosovova, Z. P.

TITLE: Method of eliminating the electrification of polyethylene films during their production

PERIODICAL: Plasticheskiye massy, no. 3, 1963, 27 - 30

TEXT: The effect of alcohols on the electrostatic charge forming on high-density polyethylene (HDPE) was studied. Alcohols were obtained by oxo-synthesis of unsaturated products of petroleum cracking. Oxyethylated alcohols had the general composition C_nE_m, where C_n is the initial alcohol with n C atoms, and E_m is the number of ethylene oxide moles per alcohol mole. The effect of the following substances was tested: 0.2-1.0% $C_8E_{3.06}$; $C_{12}E_{4.2}$; $C_{12-16}E_{3.28}$; $C_{12-16}E_{3.08}$; $C_{16}E_{3.3}$; C_8E_7; $C_{12}E_{6.4}$; $C_{12-16}E_{6.3}$; $C_{16}E_{6.0}$ added to HDPE at 120°C during rolling. The effect was determined by measuring the resistivity ρ_1 to the loss of charge by discharging a

Card 1/3

Method of eliminating the ...

capacitor. The equation $\rho_l = kt/(\log v_o - \log v)\varepsilon$ was used for calculating ρ_l; $k = 4.9128 \cdot 10^{13}$; t = duration of charged state (sec); v_o = initial voltage of sample; v = voltage after 5 min; ε = dielectric constant at 10^3 cps. For an HDPE film without additive, ρ_l was $\sim 2.6 \cdot 10^{18}$ ohm·cm. Results: On addition of 0.2%, all C_nE_m reduced ρ_l to $\sim 10^{15}$-10^{16} ohm·cm. On addition of 0.5%, $C_8E_{3.06}$; $C_8E_{7.0}$; $C_{12}E_{4.0}$; $C_{12-16}E_{3.08}$; $C_{12-16}E_{3.0}$; and $C_{16}E_{3.3}$ reduced ρ_l to $\sim 10^{15}$; whereas with $C_{12}E_{6.4}$; $C_{12-16}E_{6.27}$; $C_{12-16}E_{6.3}$, and $C_{16}E_{6.0}$ total loss of charge occurred. Products with a long carbon chain and high content of ethoxy groups gave the best effect. An addition of >0.2 C_nE_m causes migration of the oxyethylated alcohol to the film surface, thus increasing tan δ from $0.0008 \cdot 10^{-6}$ to $0.002 \cdot 10^{-6}$. $C_{10-11}E_{3.1}$; $C_{12-16}E_{2.9}$; $C_{16-18}E_{3.6}$; $C_{17-18}E_{3.4}$; $C_{10-11}E_{6.01}$; $C_{12-16}E_{6.6}$; $C_{16-18}E_{6.5}$; and $C_{17-18}E_{6.6}$ were also tested. They had been obtained by oxyethylation

Card 2/3

Method of eliminating the ...

of alcohols synthesized by hydrogenation of fatty acids. An addition of 1% of these substances caused complete loss of charge. Efficiency increased with E_m, total loss thus occurring already at 0.5%. The experimental results were confirmed in industry. There are 2 figures and 3 tables.

Card 3/3

L 13020-63 EPF(c)/EWP(j)/EWT(m)/BDS Pr-4/Pc-4 JT/RM/WW

ACCESSION NR: AP3000409 S/0191/63/000/005/0075/0076

AUTHOR: Shcherbak, P. N.; Yakovlev, Ye. N.

TITLE: All-Union scientific-technical conference on the processing, physico-chemical bases, and research methods of polyolefins

SOURCE: Plasticheskiye massy*, no. 5, 1963, 75-76

TOPIC TAGS: polyolefins, pressure molding, extrusion, research methods, conferences

ABSTRACT: The conference, held in November 1962 in Leningrad, attracted 290 participants from factories, research and teaching institutes, etc. Twenty-three of the papers read at the processing section dealt with the technical aspects of producing polyolefin sheets, tubes, fittings, and other products by pressure molding, extrusion, and other methods. Nineteen papers dealt with physico-chemical properties and research methods, including data on mechanical, dielectric, and rheologic properties, aging problems, methods of thermo- and photo-stabilization, pigment selection, and compatibility. The article cites authors and topics of 37 papers. The conference recommended the organization of a plastics research and development center and resolved that the Academy of Sciences USSR should be requested to expand theoretical work on the physico-chemical bases of the production of polyolefins and other plastics.

Card 1/2

SHCHERBAK I.N

Meeting of the technical committee ISO/TC 61 "Plastics."
Standartizatsiia 27 no.1:60-62 Ja '63. (MIRA 17:4)

L 27897-65 EWT(m)/EPF(c)/T/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP4028553 S/0191/64/000/004/0057/0061

AUTHOR: Shcherbak, P.N.

24

B

TITLE: Methods of testing polyolefins

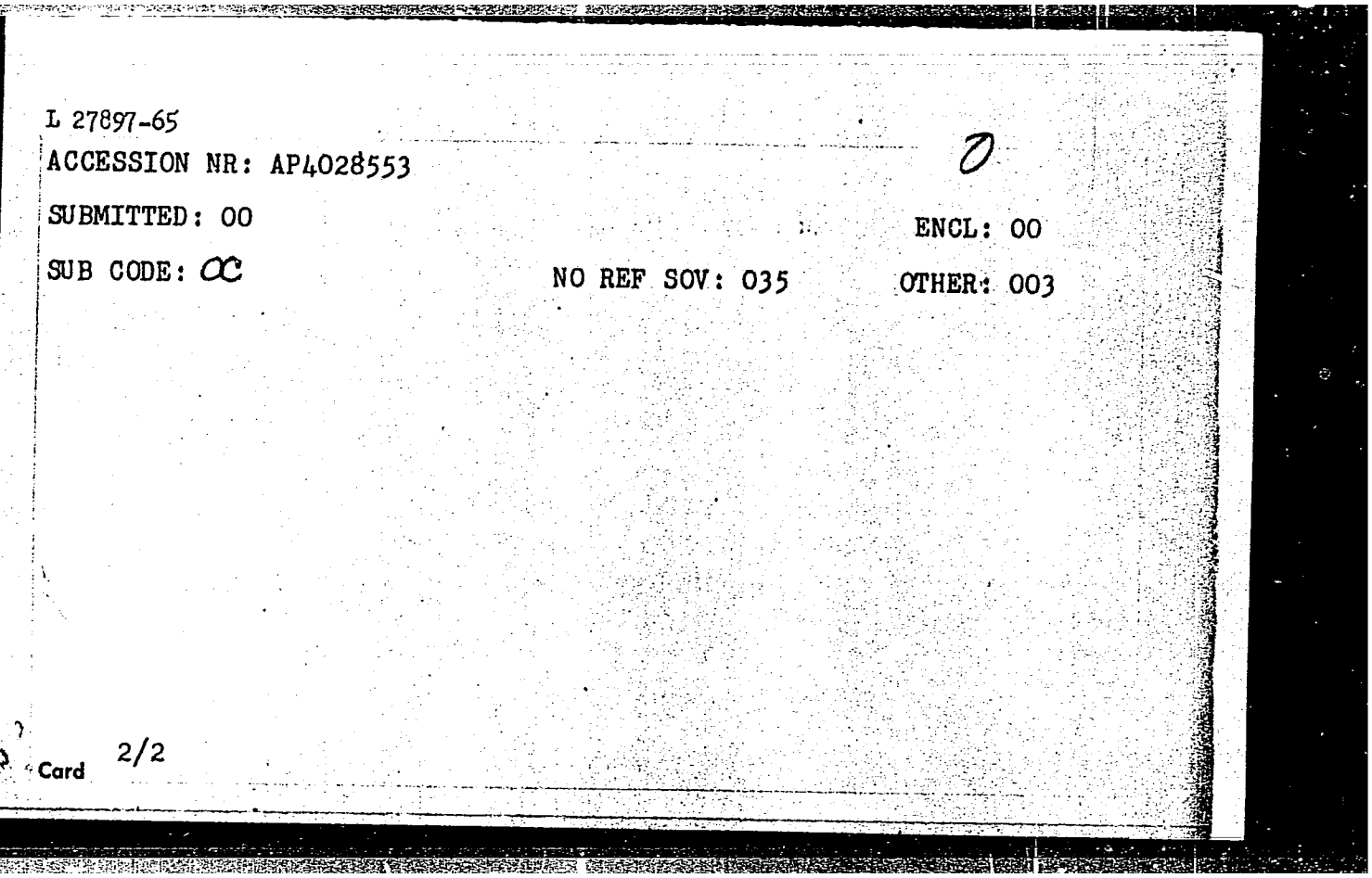
SOURCE: Plasticheskiye massy*, no. 4, 1964, 57-61

TOPIC TAGS: polyolefin, polyethylene, test method, test standard, mechanical property, electric property, physical property

ABSTRACT: Various methods for testing polyolefins, particularly polyethylenes, are reviewed. Tests for density, tensile strength, brittleness, the degree of crystallinity, orientation, elasticity, impact strength, creep, elongation, softening temperature and loss of tangent are discussed. The necessity for modernizing the existing and organizing series productions of new testing apparatuses in the USSR is stressed. Orig. art. has: 1 equation.

ASSOCIATION: None

Card 1/2



L 27897-65

ACCESSION NR: AP4028553 0

SUBMITTED: 00 ENCL: 00

SUB CODE: OC NO REF SOV: 035 OTHER: 003

Card 2/2

SHCHERBAK, P.N.

New methods of studying the kinetics of moisture sorption by films of high molecular compounds. Plast. massy no.11:36-37 '65. (MIRA 18:12)

L 13614-66 EWT(m)/EWP(j)/T RPL WW/DJ/RM

ACC NR: AP6002486 (A) SOURCE CODE: UR/0191/66/000/001/0060/0063

AUTHORS: Shcherbak, P. N.; Shpakovskaya, G. B.

ORG: none

TITLE: Dielectric strength of films made of polytetrafluoroethylene (Teflon), polystyrene, and styrene copolymer--CAM

SOURCE: Plasticheskiye massy, no. 1, 1966, 60-63

TOPIC TAGS: polymer dielectric, dielectric breakdown, dielectric layer, statistic analysis, statistic distribution

ABSTRACT: Dielectric strength of thin Teflon, polystyrene, and styrene copolymer films in heterogeneous and homogeneous electrical fields was investigated. The study of the breakdown phenomenon is complicated for such films since the structural heterogeneity, impurities, etc. at small thicknesses become more pronounced, as was observed by P. N. Shcherbak (Plast. massy, No. 9, 40-43 (1963); ibid. No. 3, 60-64 (1951); ibid., No. 10, 51-57 (1962)). This results in a wide spread of values for dielectric strength from several hundreds of kw/mm to a few kw/mm or "zero" values. From a study of 4880 breakdowns in the above materials the following conclusions were reached: 1) for an objective evaluation of dielectric strength of films less than 0.03 mm thick, exposure of weak spots, and selection of the optimal number of

Card 1/2 UDC: 678.743.746.22.13--537

L 13814-66

ACC NR: AP6002486

film layers, it is necessary to plot the differential and integral distribution curves E; 2) dielectric strength of such films has to be determined in not less than 2 layers. Orig. art. has: 4 figures and 1 formula.

SUB CODE: 11, 20/ SUBM DATE: none/ ORIG REF: 012

Card 2/2

SHCHERBAK, P.P., inzh.

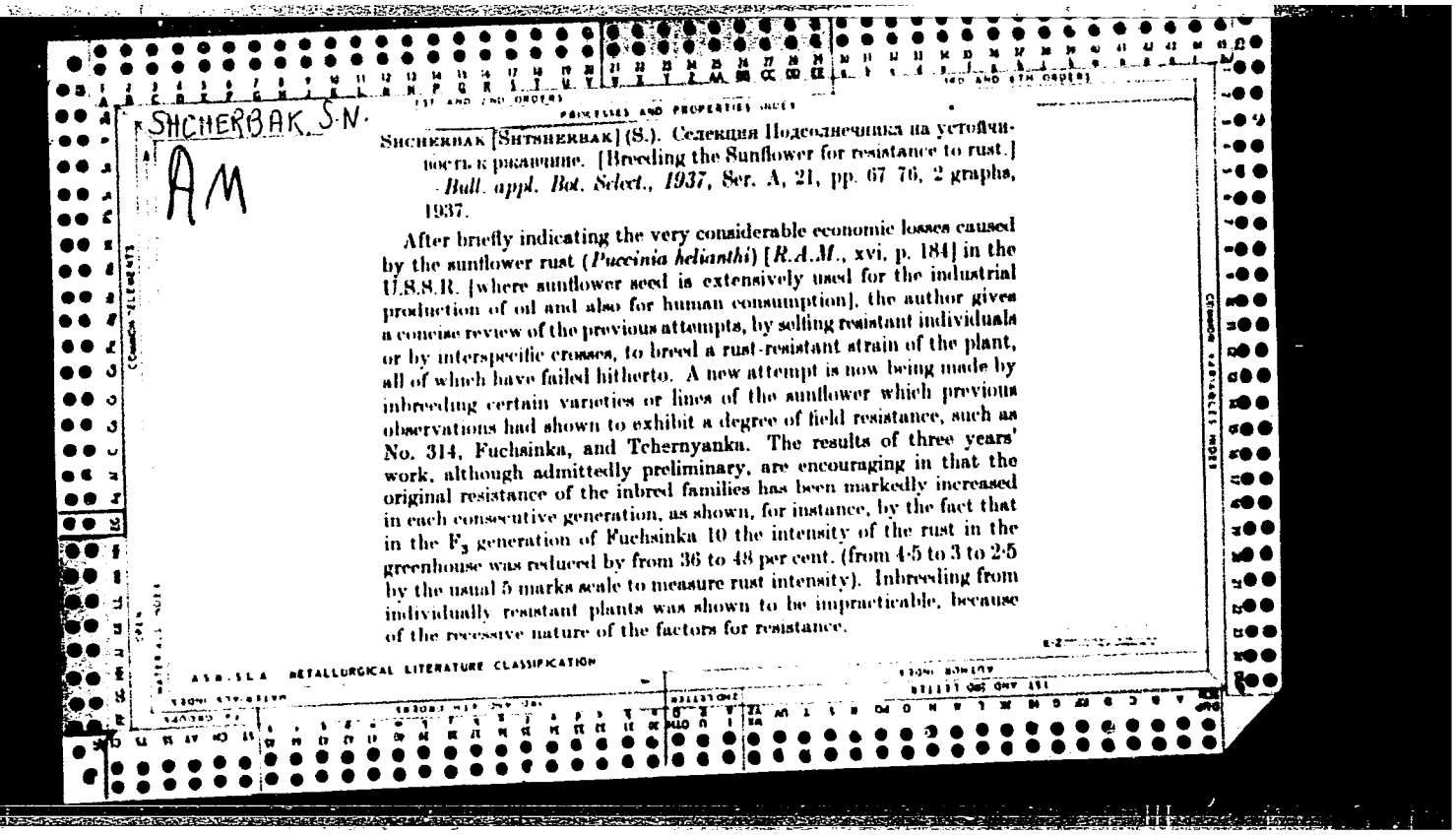
Let's constantly improve working conditions of assembly workers.
Stroi. truboprov. 5 no.10:20-21 O'60. (MIRA 13:10)
(Pipelines)

CHIZHENKO, I.M.; NEMIROVSKIY, A.Sh.; SHCHERBAK, S.K.; PUSHKAREV, A.R.; SHAPIRSHTEYN, Ya.A.

First compensating mercury rectifier device and its operation. Prom. energ. 15 no.8:20-27 Ag '60. (MIRA 15:1)
(Electric current rectifiers)
(Electric substations)

MAMUNYA, A.U.; SHCHERBAK, S.K.; ZATURENSKIY, R.A.

Measurement and regulation of the density of crude brines. Khim. prom. no. 2:134-135 F '61. (MIRA 14:4)
(Brines)



SHCHERBAK, S.N.

AM

SHCHERBAK [SHTSHERBAK] (S.). Селекция Подсолнечника на устойчивость к ржавчине. [Breeding the Sunflower for resistance to rust.] *Bull. appl. Bot. Select., 1937*, Ser. A, 21, pp. 67 76, 2 graphs, 1937.

After briefly indicating the very considerable economic losses caused by the sunflower rust (*Puccinia helianthi*) [*R.A.M.*, xvi, p. 184] in the U.S.S.R. [where sunflower seed is extensively used for the industrial production of oil and also for human consumption], the author gives a concise review of the previous attempts, by selling resistant individuals or by interspecific crosses, to breed a rust-resistant strain of the plant, all of which have failed hitherto. A new attempt is now being made by inbreeding certain varieties or lines of the sunflower which previous observations had shown to exhibit a degree of field resistance, such as No. 314, Fuchsinka, and Tchernyanka. The results of three years' work, although admittedly preliminary, are encouraging in that the original resistance of the inbred families has been markedly increased in each consecutive generation, as shown, for instance, by the fact that in the F_3 generation of Fuchsinka 10 the intensity of the rust in the greenhouse was reduced by from 36 to 48 per cent. (from 4·5 to 3 to 2·5 by the usual 5 marks scale to measure rust intensity). Inbreeding from individually resistant plants was shown to be impracticable, because of the recessive nature of the factors for resistance.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

SHCHERBAK, S.K.; SKOROKHOD, G.A.

Main problems involved in the development of chemical engineering laboratories. Zav. lab. 30 no.11:1421-1422 '64 (MIRA 18:1)

1. Glavnyy inzh. TSentral'noy zavodskoy laboratorii khimicheskoy promyshlennosti. (for Shcherbak). 2. Zamestitel' nachal'nika TSentral'noy zavodskoy laboratorii khimicheskoy promyshlennosti. (for Skorokhod).

SHCHERBAK, S. N.

Matls

Recovery of wool fat from waste waters. A. S. Salin, S. N. Shcherbak, G. M. Otrokov, and A. K. Salina. U.S.S.R. 104,212, Dec. 25, 1956. Spent waters are first subjected to flotation, and the collected fatty concentrate is heated and passed through a vibrating filter and separator.
M. Hosch

SHCHERBAK, S.N.

"Conversion of winter cereals into spring cereals and vice versa in the light of Ch. Darwin's teachings" by V.V. Skripchinskii. Reviewed by S.N. Shcherbak. Bot.zhur. 42 no.4:656-658 Ap '57. (MLRA 10:5)

1.Voronezhskiy sel'skokhozyaystvennyy institut.
(Grain) (Botany--Variation)
(Skripchinskii, V.V.)

BUDNIKOV, P.P.; AZAROV, K.P.; GRECHANOVA, S.B.; SHCHERBAK, T.I.

Study of the process of expansion of perlite. Stroi.mat. 8 no.11:32-34 N '62. (MIRA 15:12)
(Perlite (Mineral))

L 21828-65 EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EWA(d)/EPR/EPA(w)-2/
EWP(t)/EPA(bb)-2/EWP(b) Pab-10/Pr-4/Ps-4/Pt-10/Pu-4 BSD/ASDM-3/AS(mp)-2/
APETR JD/WW/WH

ACCESSION NR: AP5002932 S/0072/65/000/001/0033/0036

AUTHOR: Azarov, K. P. (Doctor of technical sciences) (Deceased); Grechanova, S. B. (Candidate of technical sciences); Shcherbak, T. I. (Engineer)

TITLE: Wetting and adhesion of ceramic coating of metals B

SOURCE: Steklo i keramika, no. 1, 1965, 33-36 18

TOPIC TAGS: 18 heat resistant metal coating, metal enamel, ceramic coating, frit, chromium sesquioxide, contact angle, enamel adhesion, ceramic coating adhesion

ABSTRACT: The purpose of this study was to determine the effect of wetting on the process of coating metals with glass-ceramic enamels, 15 especially with those enamels containing Cr_2O_3, and on the adhesion 15 of such coatings to metal. The wetting of two Ni-based alloys, I and II, and two nickel-chromium steels [unspecified] with various frits, such as alkali-free barium silicate frits with a low B_2O_3 content, titanoborosilicate frits, and a mixture of frits with Cr_2O_3, was investigated. Alloy I contained Cr, Ti, and Al, and alloy II con-

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L 21828-65

ACCESSION NR: AP5002932

tained, in addition, Nb and Mo. The wetting at various temperatures was traced by means of a motion picture camera, and curves showing the dependence of the contact angles on temperature in various frit-to-metal combinations were obtained. The effect of the addition of MoO_3, CuO, CuO + Sb_2O_3, Sb_2O_3, WO_3, or Co_2O_3 as surfactants in one of the heat-resistant frits was tested. The results of the study indicated that the accuracy of readings depends on many side phenomena, such as crystallization, bloating, phase separation, oxidation of metal, and the melt interaction with the oxidized metal. However, since these phenomena also take place in the actual coating process, the data obtained in the study can be used for the evaluation of the relationship between the wetting and the adhesion. The experiments conducted indicated that the wetting depends both on the metal and frit. Low-melting frits wet the metal well, but they have poor adhesion. The addition of Cr_2O_3 to a heat-resistant frit improved the contact angle and facilitated the sintering and spreading on metal; an increase in Cr_2O_3 content in low-melting frits increased the contact angle and the strength of adhesion. The introduction of a surfactant improved the wetting and sintering, but did not change the

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L 21828-65

ACCESSION NR: AP5002932

adhesion. Other conditions being equal, high-melting and poorly wetting frits have a better adhesion to metals than low-melting frits. The poor adhesion of the low-melting frits seems to be caused by insufficient metal oxidation under a rapidly sintering coating, while a high-melting and slowly sintering coating provides a sufficient development of an oxide film, which promotes the adhesion. The phenomenon was confirmed experimentally. The index of wetting is not the basic factor controlling the adhesion. The diffusion of atoms was found to be an important factor in the development of the cohesive layer. It was noted that the strength of adhesion increases after prolonged service or after tests at high temperatures. The addition of small amounts of metal powders to the frits is suggested in order to distort the crystalline lattice of the coated metal by diffusion. Orig. art. has: 5 figures.

ASSOCIATION: Novocherkasskiy politekhnicheskiy institut (Novocherkassk Polytechnical Institute)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM, MT

NO REF SOV: 003 OTHER: 002 ATD PRESS: 3166

Card 3/3

SHCHERBAK, V.

Using local materials in farm buildings. Sel'. stroi. 13 no. 9:5-
S '58. (MIRA 11:10)

1. Glavnyy inzhener upravleniya po stroitel'stvu v kolkhozakh Ul'yanovskoy oblasti.
(Sengilei District--Building materials)

YEGOROV, Yu. [IEhorov, IU.]; SHCHERBAK, V., red.; LEVCHENKO, O., tekhn.red.

[The Ukraine through the eyes of our guests from abroad; collection] Ukraina ochyma zarubizhnykh hostei; zbirnyk. Kyiv, Derzh.vyd-vo polit.lit-ry URSR, 1959. 146 p.

(MIRA 13:5)

(Ukraine--Description and travel)

SEMIK, Pavel Nikolayovich [S'omyk, P.]; SHCHERBAK, V., red.; MEYEROVICH, S. [Meierovych, S.], tekhn.red.

[With American farmers; an agronomist's notebook] U amerykans'kykh fermeriv; notatky agronoma. Kyiv, Derzh.vyd-vo polit.lit-ry URSR, 1960. 63 p. (MIRA 13:7)
(United States--Agriculture)

SHCHERBAK, V., inzh. (Minsk)

New snow loader. Zhil.-kom.khoz. 10 no.2:27 '60. (MIRA 13:5)
(Snow removal--Equipment and supplies)

SHCHERBAK, V., inzh. (g.Minsk)

Machinery manufacturers of White Russia provide equipment for communal economy enterprises. Zhil.kom. khoz. 10 no.11:28 '60. (MIRA 13:11)

(Minsk--Snow plows)

SHCHERBAK, V.V., inzh.

Small foreign hydraulic-lift trucks. Stroi. i dor. mash. 6 no.10:35-36 O '61. (MIRA 14:10)
(Austria—Industrial power trucks)

SHCHERBAK, V., inzh.

Automatic device for making pile. Zhil.-kom. khoz. 13 no.3:15 Mr '63. (MIRA 16:3)

(Brooms and brushes) (Snow removal--Equipment and supplies)

NEDYALKOV, Ivan Petrovich; SHCHERBAK, V.G. [Shcherbak, V.H.], red.; MEYEROVICH, S.L. [Meierovych, S.L.], tekhn. red.

[In the interest of peace; significance of the conquest of space for the establishment of peace] V interesakh myru; pro znachennia zavoiuvannia kosmosu dlia spravy myru. Kyiv, Derzhpolitvydav URSR, 1962. 90 p. (MIRA 16:3)
(Astronautics) (Peace)

SHCHERBAK, V.M.

Role of faulting in the structure and the localization of ores in the Eltaysko-Kurzhunkul'skoye ore region in Turgay. Izv.AN Kazakh.SSR.Ser.geol. 22 no.5:65-70 S-O '65. (MIRA 18:12)

1. Institut geologicheskikh nauk imeni K.I.Satpayeva, g. Alma-Ata.

SHCHERBAK, V.P.

Some geochemical characteristics of the gas potential of the Elbrus area. Geokhimiia no.7:889-894 Jl '65. (MIRA 18:11)

1. Pyatigorskiy nauchno-issledovatel'skiy institut kurortologii i fizioterapii. Submitted October 16, 1964.

SHCHERBAK, V.P.

Gas manifestation in the upper reaches of the Terek River (Kazbek volcanic region). Dokl. AN SSSR 157 no.6:1388-1390 Ag '64. (MIRA 17:9)

1. Nauchno-issledovatel'skiy institut kurortologii i fizioterapii. Predstavleno akademikom D.I. Shcherbakovym.

SHCHERBAK, V.V., inzh.

Portable compressor stations. Stroi. i dor. mash. 7 no.12: 35-36 D '62. (MIRA 16:1)
(Air compressors)

RAZUMOV, V.N.; SEREBRO, V.S.; SHCHERBAK, V.V.

Heat resistance of materials for chill molds. Lit.proizv. no.7:37-39 Jl '64. (MIRA 18:4)

KONTUSH, K.V., inzh.; SHCHERBAK, V.V., inzh.

New machines for the maintenance and repair of roads. Stroi. i dor. mash. 10 no.3:29-31 Mr '65. (MIRA 18:5)

S/0057/64/034/001/0168/0173

ACCESSION NR: AP4009939

AUTHOR: Adonina, A.I.; Shcherbak, V.V.

TITLE: Diffraction of obliquely incident electromagnetic waves by a plane metallic grating and reflector separated by a magnetodielectric

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.1, 1964, 168-173

TOPIC TAGS: diffraction, electromagnetic waves, oblique incidence, grating, grating and reflector, equivalent boundary conditions, magnetodielectric, microwave antennas

ABSTRACT: This paper treats the diffraction of obliquely incident, arbitrarily polarized plane electromagnetic waves by a complex structure consisting of an infinite plane metallic grating and a parallel plane reflector separated by a layer of material with arbitrary complex dielectric constant and magnetic permeability (magnetodielectric). This problem is believed to have practical applications to microwave antenna and measuring technology, where it is frequently desirable to support a metallic grating or other structure on dielectric material. The incident and reflected waves and the field in the dielectric between the grating and the reflector are

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ACC.NR: AP4009939

expanded in Fourier series and the boundary conditions on the grating and the reflector are expressed in terms of the coefficients. The resulting equations are transformed into an infinite set of inhomogeneous linear equations for the expansion coefficients by methods expounded elsewhere (Z.S.Agranovich, V.A.Marchenko and V.P. Shestopalov, ZhTF,32,No.4,1962; A.I.Adonina and V.P.Shestopalov, Ibid.33,No.6,1963). This transformation involves the solution of what the authors call an inhomogeneous conjugation problem: to find two functions, one analytic inside the unit circle and one analytic outside it, such that their difference vanishes on an arc of the unit circle and their sum assumes preassigned values on the remaining portion of the circle. The resulting system of linear equations for the expansion coefficients is convergent and can be solved approximately with an electronic computer. No numerical results are given. In the long wavelength limit, the equations for the expansion coefficients can be solved analytically to obtain "equivalent boundary conditions" for the diffracting structure. These conditions are obtained. When the dielectric constant and permeability are unity and the reflector is removed to infinity, these equivalent boundary conditions reduce to those previously obtained for a plane grating by N.N.Smirnov (ZhTF,28,No.7,1958). Orig.art.has: 29 formulas.

Card2/3

ACC.NR:AP4009939

ASSOCIATION:Khar'kovskiy gosudarstvenny*y universitet (Khar'kov State University)

SUBMITTED: 06Dec62 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: PH, GE NR REF SOV: 006 OTHER: 000

Card 3/3

S/0057/64/034/002/0333/0335

ACCESSION NR: AP4013423

AUTHOR: Adonina, A.I.; Shcherbak, V.V.

TITLE: Equivalent boundary conditions on a metallic grating at the boundary between two magnetodielectrics

SOURCE: Zhurnl.tekhn.fiz., v.34, no.2, 1964, 333-335

TOPIC TAGS: diffraction grating, magnetodieleatric, equivalent boundary conditions, ring waveguide, helix waveguide

ABSTRACT: Equivalent boundary conditions for the complex amplitudes of the electromagnetic field on an infinite plane metallic grating at the boundary between two magnetodielectrics are derived from the solution of the corresponding diffraction problem (A.I.Adonina, V.V.Shcherbak,ZhTF,34,168,1964). The equivalent boundary conditions are valid in the long wavelength limit and are obtained by eliminating the amplitudes of the incident wave from the expressions for the fields on the grating with the diffracted waves neglected. The conditions are

$$E_s = -ix\frac{1}{1+\frac{1}{\mu}}\ln\frac{1+u}{2}\left\{H_{z1}-H_{z2}-\frac{i}{k}\frac{1+\frac{1}{\mu}}{1+\varepsilon}\frac{\partial}{\partial s}(E_{\tau 1}-\varepsilon E_{\tau 2})\right\},$$

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ACCESSION NR: AP4013423

$$H_{s1} - H_{s2} = -ix(1+\varepsilon)\ln\frac{1-u}{2}\left\{E_\tau + \frac{i}{k}\frac{1+\frac{1}{\mu}}{1+\varepsilon}\frac{\partial}{\partial s}B_r\right\}$$

where the subscripts 1 and 2 refer to the two media, ε and μ are the ratios of the complex dielectric constant and magnetic permeability, respectively, in medium 1 to the corresponding quantities in medium 2, indices s, r, τ refer respectively to the direction of the grating slots, the direction normal to the grating, and the direction perpendicular to both s and r, x is the ratio of the grating constant and the wavelength, and $u = \cos(\pi d/l)$, where l is the grating constant and d is the width of the slots. The equivalent boundary conditions are said to be applicable to the investigation of ring waveguides and helix waveguides in a manner indicated by N.N.Smirnov (ZhTF 28,No.7,1958). Orig.art.has: 13 formulas.

ASSOCIATION: Khar'kovskiy gosudarstvenny*y universitet im.A.M.Gorkogo (Kharkov State University)

SUBMITTED: 25Dec62 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: PH NR REF SOV: 006 OTHER: 000

Card 2/2

L 1171-66 EWT(1)/EWA(h)

ACCESSION NR: AP5017657 UR/0109/65/010/007/1202/1213
621.372.822.2

AUTHOR: Shestopalov, V. P.; Shcherbak, V. V. 13 B

TITLE: Inhomogeneities in rectangular waveguides. Inductive obstacles 25

SOURCE: Radiotekhnika i elektronika, v. 10, no. 7, 1965, 1202-1213

TOPIC TAGS: rectangular waveguide

ABSTRACT: A theoretical investigation is presented of inductive obstacles (such as a single strip, a diaphragm, several strips, symmetrical or unsymmentrical) in rectangular waveguides. This is a continuation of the authors' work on capacitive strip obstacles (Rad. i elektronika, 1965, 10, 6, 1043) where the Riemann-Gilbert method was used. Equations are set up for determining the coefficients of transmission and reflection and the amplitudes of waves of diffraction spectra when an H_{po}-mode falls on the above inductive obstracles. The equivalence of inductive obstacles to a strip lattice of a suitable configuration is demonstrated. Numerical calculations show that the symmentrical strip is shunting the waveguide to the highest and the symmetrical septum to the lowest degree. The results may be extended over any mode falling on an inductive obstacle. Orig. art. has: 5 figures and 43 formulas.

Card 1/2

L 1171-66

ACCESSION NR: AP5017657

ASSOCIATION: none

SUBMITTED: 09Apr64

NO REF SOV: 005

ENCL: 00

OTHER: 002

SUB CODE: EC

Card 2/2 DP

L 00845-66 EWT(l)/EEC-4/EWA(h)
ACCESSION NR: AP5015810

UR/0109/65/010/006/1043/1056
621.372.822

13
10
15

AUTHOR: Shestopalov, V. P.; Shcherbak, V. V.

TITLE: Inhomogeneities in rectangular waveguides. Capacitive obstacles

SOURCE: Radiotekhnika i elektronika, v. 10, no. 6, 1965, 1043-1056

TOPIC TAGS: rectangular waveguide

ABSTRACT: The Riemann-Gilbert method developed for solving metal-grating diffraction problems is used for investigating the inhomogeneities in a rectangular waveguide. The problem of diffraction of $H_{p,0}$-modes by various metal-strip capacitive obstacles is reduced to an infinite set of linear algebraic equations with unknown amplitudes of the natural modes arising at the obstacles. For a finite number of the natural modes, the infinite set of equations becomes a finite set; the general form of the additional terms is known which permits calculations with a specified accuracy. It is proven that a waveguide obstacle with any distribution of strips and windows is equivalent to a periodic grating whose strips and slots in its period are distributed according to the given obstacle and its image. Numerical values of the reflection (or transmission)

Card 1/2

L 00845-66
ACCESSION NR: AP5015810

factors, equivalent admittance and conversion loss were calculated on a computer for various capacitive obstacles as functions of frequency system parameters. Orig. art. has: 7 figures and 44 formulas.

ASSOCIATION: Khar'kovskiy institut gornogo mashinostroyeniya, avtomatiki i vychislitel'noy tekhniki (Khar'kov Institute of Mining-Machine Construction, Automatics, and Computer Engineering)

SUBMITTED: 09Apr64 ENCL: 00 SUB CODE: EC

NO REF SOV: 005 OTHER: 001

Card 2/2

ACC NR: AP6018997 SOURCE CODE: UR/0109/66/011/006/1066/1075

AUTHOR: Shestopalov, V. P.; Shcherbak, V. V.

ORG: none

TITLE: Inhomogeneities in rectangular waveguides. 25 Double strip obstacles

SOURCE: Radiotekhnika i elektronika, v. 11, no. 6, 1966, 1066-1075

TOPIC TAGS: rectangular waveguide, waveguide diffraction, waveguide iris

ABSTRACT: The problem of mode diffraction by a single-layer metal-strip obstacle was solved by the authors earlier (Rad. i Elektronika, 1966, v. 11, no. 4, 675). The present article extends the above problem over the case of two-layer ("double") arbitrary strip obstacles placed in a waveguide with a spacing between them. Equations are set up (and solved by the Riemann-Gilbert method for a particular case) describing the diffraction of $E^{y}_{p,l}$ and $TE^{y}_{p,l}$ modes by the obstacles. The modes are assumed to be polarized in a direction parallel to the slots in the obstacles. A particular case of two single-slot asymmetrical irises is treated numerically. Orig. art. has: 6 figures and 22 formulas.

SUB CODE: 09 / SUBM DATE: 12Feb65 / ORIG REF: 004

UDC: 621.372.822

Card 1/1

ACC NR: AR7000892 SOURCE CODE: UR/0058/66/000/009/H034/H034

AUTHOR: Shcherbak, V. V.

TITLE: Twin equal-slot waveguide obstacles

SOURCE: Ref. zh. Fizika, Abs. 9Zh246

REF SOURCE: Radiotekhnika. Resp. mezhved. nauchno-tekhn. sb., vyp. 1, 1965, 42-57

TOPIC TAGS: rectangular waveguide, waveguide diffraction, waveguide obstacle, twin waveguide obstacle

ABSTRACT: An analysis is made of the problem of wave diffraction in a rectangular waveguide using capacitive and inductive obstacles represented by two systems of infinitely thin, ideally conductive strips placed symmetrically and asymetrically in the cross-section at a certain distance from each other along axis z. The projections of both strip systems on the cross-section of the waveguide coincide ("equal-slot" obstacles). Cases when the strips are in contact with the waveguide walls (diaphragm) and when they are removed at a certain distance from the latter

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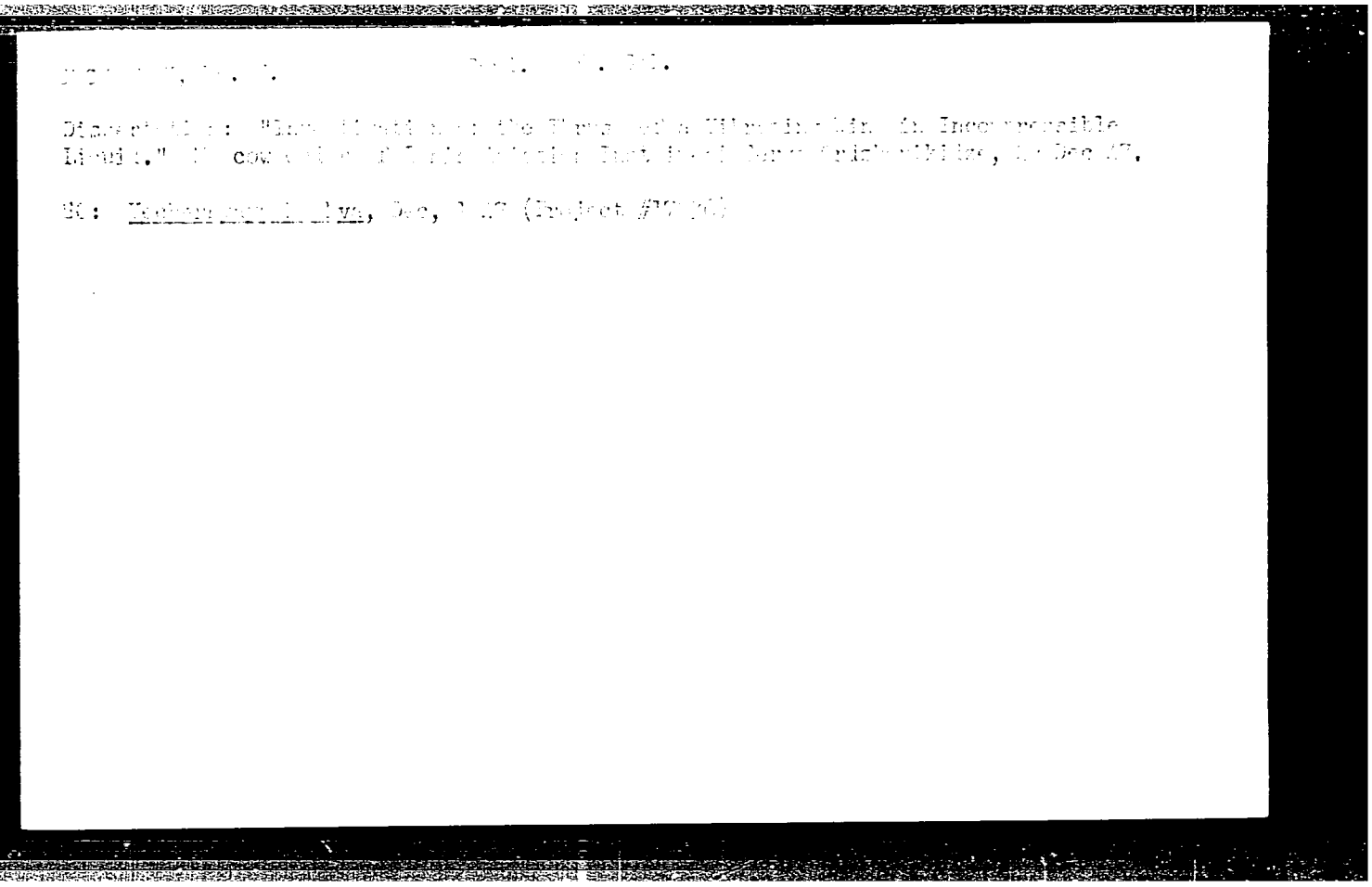
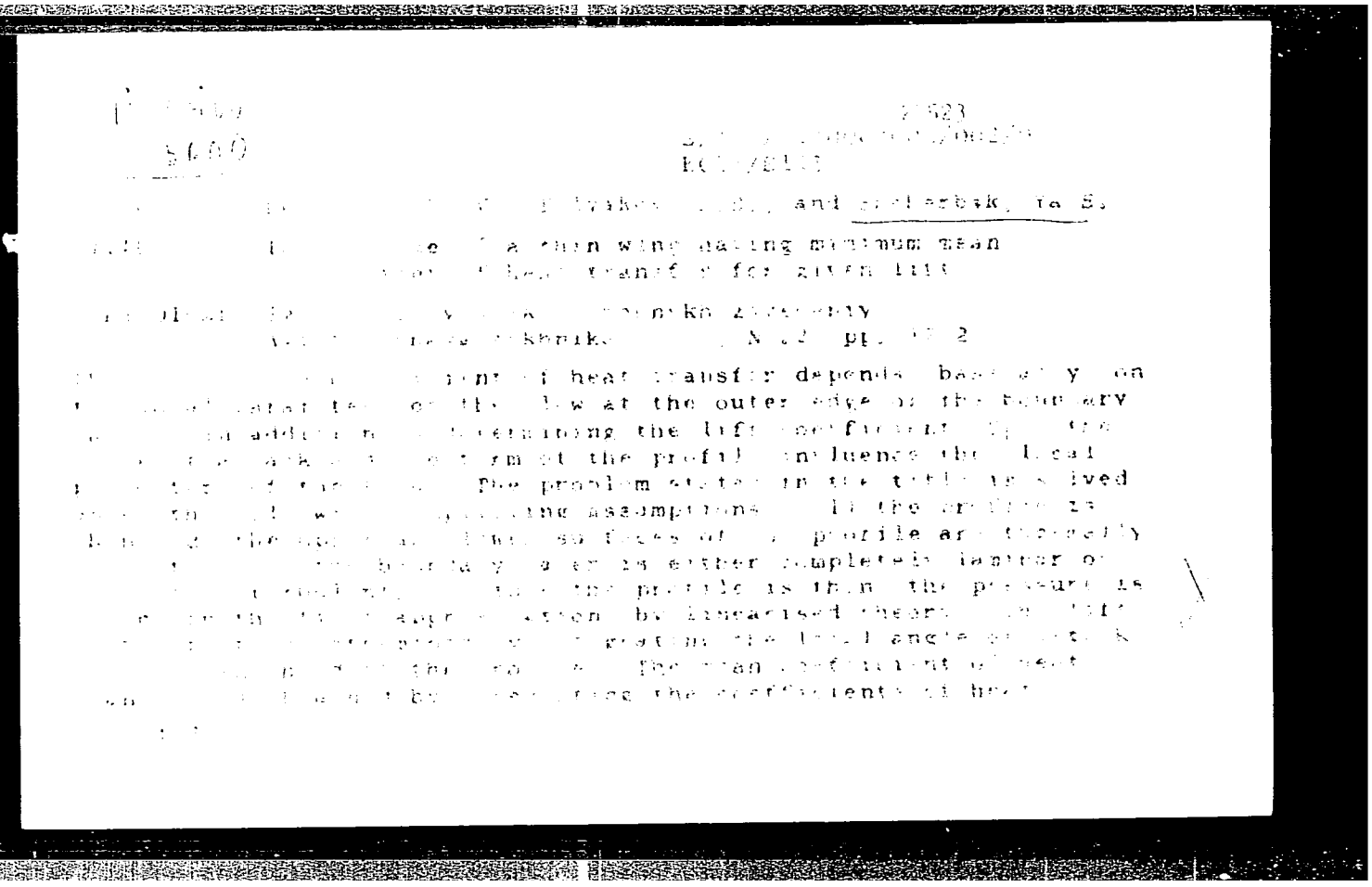
ACC NR: AR7000892

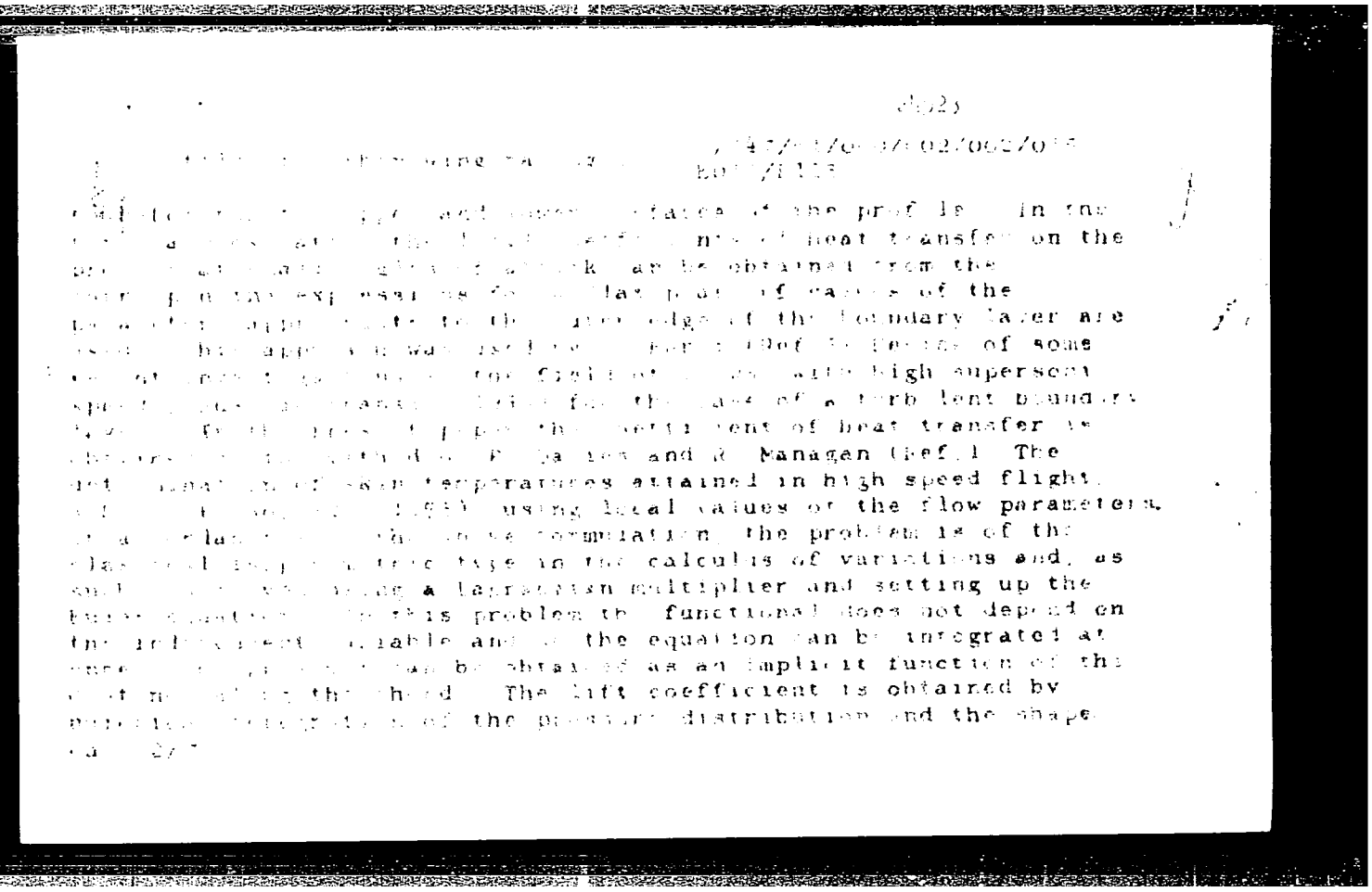
are investigated. Starting from Maxwell equations, the author writes expressions for the field components in each of three regions: prior to the obstacle, within the obstacle, and following the obstacle. In the first region, the diffraction field is represented by the incident wave and the sum of reflected waves; in the second, by the sums of direct and backward waves; in the third, by the sum of the waves which have passed. The use of boundary conditions on the windows and strips of the obstacle results in four infinite systems of equations with respect to differences and sums of direct and backward wave amplitudes. These systems are reduced to the Riemann-Hilbert problem whose solution gives an infinite quasi-regular system of algebraic equations. Reflected and passed wave amplitudes are found on the basis of direct and backward wave amplitudes determined through the solution (in finite order) of this system. The existence of a link between the results thus obtained and those presented for single obstacles in other studies (RZhFiz, 1965, 11Zh258, 259) is pointed out, and a method for obtaining results for twin obstacles from the corresponding expressions for single obstacles is explained. Calculation data on the amplitudes of fundamental-type reflected and passed waves are presented for the cases of a double symmetrical inductive strip and of a double asymmetrical inductive diaphragm, as a function of geometric parameters. The graphs are of an oscillatory nature owing to the resonance phenomena in the space between the systems of strips. [Translation of abstract] [DW]

SUB CODE: 20, 09/

Card 2/2







... heating ...

... of the profile ... determined by integrating angle of attack of the mean chord of the profile. Since the pressure was originally defined in terms of the angle of attack, and the pressure is now ... this integration can be effected. The coefficient of heat transfer depends strongly on the temperature but, by consideration of the two limiting regimes: 1) long steady flight without heat ... and ... instantaneous start at a given height and Mach number ... it is shown that temperature has little effect on the shape of the optimum profile ... that the profile is optimum for ... intermediate ... temperatures.

There are ... figures and ... references: ... English and 4 Russian translations of ... literature. The English language reference ...

Ref. ... I. Monaghan. The determination of skin temperatures ... in high speed flight. A.R.C. C.P. No. 123, 1953.

SUBMITTED: ... 1960

ACC NR: AR6000713 SOURCE CODE: UR/0124/65/000/009/B090/B090

AUTHORS: Polyakov, M. B.; Shcherbak, Ya. S.

71
B

TITLE: Thin profile of supersonic airfoil with minimum average heat transfer coefficient for given aerodynamic characteristics

SOURCE: Ref. zh. Mekhanika, Abs. 9B602

REF SOURCE: Dokl. 3-y Sibirsk. konferentsii po matem. i mekhan., 1964. Tomsk, Tomskiy un-t, 1964, 336-337

TOPIC TAGS: supersonic flow, airfoil, heat transfer coefficient, skin friction, FRICTION COEFFICIENT

ABSTRACT: The formulation and solution of the isoperimetric variational problem is given to determine the shape of a supersonic airfoil cross section which will ensure a minimum average heat transfer coefficient for given aerodynamic characteristics. The solution is given for Mach numbers 7--8; the flow is assumed either fully laminar or turbulent, where the local friction and heat transfer coefficients are calculated using flat plate formulae including local magnitudes for the flow parameters. The calculations show that, in comparison with the flat plate, the maximum local heat transfer coefficient is lowered by 80--85% and the average heat transfer coefficient by 15%. A. M. Gubertov [Translation of abstract]

SUB CODE: 20

Card 1/1

EWT(d)/FS(m)/EWT(1)/EWP(m)/EWT(m)/EWP(w)/ETC(F)/EPF(n)-2/EWG(m)/
T-2/EWP(k)/FCS(k)/EWA(h) SOURCE CODE: UR/0147/65/000/004/0052/0061
ETC(m)/EWA(1) WW/EM

AUTHOR: Polyakov, M. B.; Shcherbak, Ya. S.

ORG: none

TITLE: Thin profile of a supersonic wing with a minimum average heat-transfer coefficient at given aerodynamic characteristics

SOURCE: IVUZ. Aviatsionnaya tekhnika, no. 4, 1965, 52-61

TOPIC TAGS: aerodynamics, aerodynamic heating, heat transfer, heat transfer coefficient, thin wing, supersonic flow, aerodynamic characteristic

ABSTRACT: This paper deals with the problem of determining the optimum shape of a supersonic wing with given aerodynamic characteristics (lift, total drag, lift-drag ratio, etc.) which minimizes the average heat-transfer coefficient. The problem is reduced to determining the function $y = y(x)$ of the characteristic line of a thin profile which ensures the extremum of the functional of the average heat-transfer coefficient at given values of drag coefficients. This isoperimetric variational problem is solved by using indeterminate Lagrange multipliers. The solution is presented for the case when lift and drag are given, from which the solutions of other particular problems may be obtained. It is assumed that the lower and upper surfaces of the thin profile are thermally insulated from each other and that the boundary layer is totally laminar or totally turbulent. The

Card 1/2 UDC: 533.601.155

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ACC NR: AP6003183

local heat-transfer coefficients on a slightly cambered profile were determined by substituting the local flow parameters in the formulas obtained for an isothermal "plate" at zero angle of attack. The results of calculations made by using the formulas obtained by F. Davies and R. Monaghan are given in graphs and analyzed. [AB]

Orig. art. has: 4 figures and 39 formulas.

SUB CODE: 20/ SUBM DATE: 07Dec64/ ORIG REF: 002/ OTH REF: 002/ ATD PRESS: 4176

Card 2/2

SHCHERBAK, Yuriy (Kiyev)

Neuron started talking. Nauka i zhizn' 29 no.6: 50-53 Je '62.
(MIRA 15:10)

(ELECTROPHYSIOLOGY) (NERVES)

U.S.S.R. Acad. Sci.

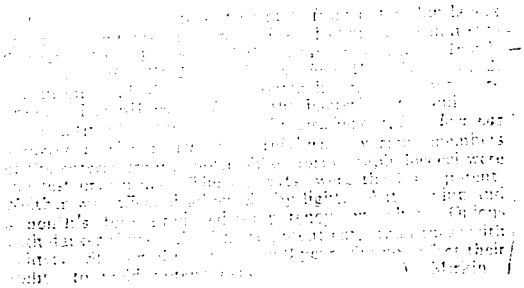
SHCHERBAK, Yu. P. "Bactericidal Action of Extracts from Onion Scales," Prikl. Biokh., vol. 30, no. 10, 1958, pp. 49-50. 410 P33

SO: SIRA SI-90-73, 15 Dec 1953

CHCHERBAK, Yu.F.

Utilization of onion skin extract for medicinal purposes. Veterinariia 30 no.11:55 N '53. (MLRA 6:11)

SHCHERBAK, Yu. F.



- Institut Epidemiologii i Mikrobiologii Imeni N. F. Gamaleya, Dept Microbiology

GURSKIY, Yu.N.; SHCHERBAK, Yu.F.

Blood protein fractions in brucellosis patients following treatment with antibiotics, vaccine, and hormone preparations. Lech. infekts. bol'. no.4:219-228 '60. (MIRA 14:5)

(BRUCELLOSIS) (BLOOD PROTEINS)
(HORMONE THERAPY) (ANTIBIOTICS)

SHCHERBAK, Yu.F.

Factor of permeability of the vessels in the treatment of chronic brucellosis. Lech. infekts. bol'. no.4:296-305 '60. (MIRA 14:5)
(BRUCELLOSIS) (BLOOD VESSELS)
(HORMONE THERAPY) (ANTIBIOTICS)

GURSKY, Yu.N.; MIKHAYLOVA, M.M.; SHCHERBAK, Yu.F.

Use of oxytetracycline for intramuscular administration in the treatment of chronic brucellosis. Antibiotiki 5 no.2:110-114 '60. (MIRA 14:5)

1. Kafedra infektsionnykh bolezney (zav. - deystvitel'nyy chlen AMN SSSR prof. G.P.Rudnev) TSentral'nogo instituta usovershenstvovaniya vrachey, Moskovskaya gorodskaya ordena Lenina klinicheskaya bol'nitsa imeni S.P.Botkina (glavnyy vrach - prof. A.N.Shabanov).
(BRUCELLOSIS) (TERRAMYCIN)

SHCHERBAK, Yu. F., Cand. Medic. Sci. (diss) "Materials for Study of Permeability of Blood Capillaries and Dynamics of Protein Fractions of Blood Serum in Chronic Brucellosis," Moscow, 1961, 15 pp. (Acad. Med. Sci. USSR) 260 copies (KL Supp 12-61, 290).

SHCHERBAK, Yu.F. (Moskva)

Dynamics of capillary permeability in chronic brucellosis.
Klin.med. 39 no.4:117-123 '61. (MIRA 14:4)

1. Iz kafedry infektsionnykh bolezney (zav. - deystvitel'nyy chlen AMN SSSR prof. G.P. Rudnev) TSentral'nogo instituta usovershenstvovaniya vrachey (dir. M.D. Kovrigina).
(BRUCELLOSIS) (CAPILLARIES--PERMEABILITY)

SOBOLEV, V.R.; SHCHERBAK, Yu.F.

Treatment of brucellosis by intramuscular administration of tetracycline. Antibiotiki 7 no.3:79-83 Mr '62. (MIRA 15:3)

1. Kafedra mikrobiologii (zav. - chlen-korrespondent AMN SSSR prof. Z.V. Yermol'yeva), kafedra infektsionnykh bolezney (zav. - deystvitel'nyy chlen AMN SSSR prof. G.P. Rudnev) TSentral'nogo instituta usovershenstvovaniya vrachey.
(BRUCELLOSIS) (TETRACYCLINE)