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S/191/62/000/003/005/010
B101/B147

15.8170
AUTHORS: Sobolevskiy, M. V., Nazarova, D. V., Chistyakova, L. A.,
Kirillina, Y. V.

TITLE: Thermooxidative stability of polymethyl phenyl siloxanes
with different end groups

PERIODICAL: Plasticheskiye massy, no. 3, 1962, 13 - 16

TEXT: It was experimentally proved that in polyorganosiloxanes the
stability to thermal oxidation increased with increasing content of phenyl
groups. The investigation was conducted on the polymers

$(\text{CH}_3)_3\text{Si-O}-\left[\begin{array}{c} \text{CH}_3 \\ | \\ -\text{Si-O}- \\ | \\ \text{C}_6\text{H}_5 \end{array} \right]_n-\text{Si}(\text{CH}_3)_3$ (I) obtained by fractional distillation of a ✓

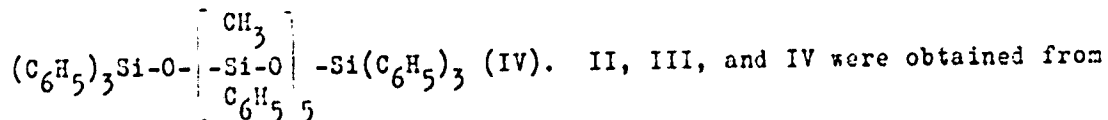
PFMS-3 (PFMS-3) liquid; $(\text{CH}_3)_2\text{C}_6\text{H}_5\text{Si-O}-\left[\begin{array}{c} \text{CH}_3 \\ | \\ -\text{Si-O}- \\ | \\ \text{C}_6\text{H}_5 \end{array} \right]_n-\text{SiC}_6\text{H}_5(\text{CH}_3)_2$ (II);

$\text{CH}_3(\text{C}_6\text{H}_5)_2\text{Si-O}-\left[\begin{array}{c} \text{CH}_3 \\ | \\ -\text{Si-O}- \\ | \\ \text{C}_6\text{H}_5 \end{array} \right]_n-\text{Si}(\text{C}_6\text{H}_5)_2\text{CH}_3$ (III); and

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methyl phenyl dichlorosilane synthesized according to W. Patnod, D. Wilcock (see below), partly hydrolyzed, and reacted with the corresponding sodium triorganosilanolates. The authors determined (1) the gelatinization rate of the polymers at 300, 350, and 400°C; (2) the viscosity at 100°C after blowing air through the liquid polymer at 350 or 400°C. Results: ✓

(1) Gelatinization rate:

Polymer	at 300°C	at 350°C	at 400°C
I	evaporates	evaporates	-
II	18 hrs 30 min	2 hrs 18 min	37 min 23 sec
III	50 hrs	5 hrs 30 min	1 hr 31 min
IV	74 hrs	11 hrs 45 min	2 hrs 21 min

(2) Change in viscosity after thermooxidation at 350°C:

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Polymer	Initial viscosity, cstokes	Viscosity after 9-10.5 hrs, cstokes	Increase in viscosity by (%)
I	5.275	53.70	918
II	14.99	126.8	746
III	35.37	160.30	353
IV	167.95	583	247

Thus, polymers with only one phenyl end group offer no advantage since a noticeable protective action occurs with two phenyl end groups only. A similar behavior was observed in thermooxidation at 400°C: I, II, III gelatinized within 9 - 11 hrs, IV after 14.5 hrs only. There are 5 figures, 3 tables, and 3 non-Soviet references. The three references to English-language publications read as follows: Murphy, C. E. Saunders, D. C. Smuth, Ind. Eng. Chem., 42, no. 12, 2462 (1950); W. H. Daut, J. E. Hyde, J. Am. Chem. Soc., 74, 386 (1952); W. Patnod, D. Wilcock, J. Am. Chem. Soc., 68, 358 (1946).

Card 3/3

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S/191/62/000/010/004/010
B101/B186

AUTHORS: Sobolevskiy, M. V., Chistyakova, L. A., Nazarova, D. V.,
Kirillina, V. V.

TITLE: Synthesis of α,ω -hexaorganopolydimethyl-polymethyl-phenyl
siloxanes with regularly alternating dimethyl- and methyl-
phenyl siloxy links in the chain

PERIODICAL: Plasticheskiye massy, no. 10, 1962, 17 - 21

TEXT: Pure 1,1-disodium salt of dimethyl silanediol, 1,3-disodium salt of
1,1,3,3-tetramethyl disiloxanediol, and 1,3-disodium salt of 1,3-dimethyl-
1,3-diphenyl siloxanediol were synthesized by reaction of cyclic polyorga-
nosiloxanes with NaOH in aqueous C_2H_5OH according to F. Hyde's method and
a modification of other methods (US Patent 2567110, C. A. 45, 10676 (1951)).
To prepare these salts in a pure condition, they have to be kept in vacuo
at $140^\circ C$ for a considerable time so as to remove the four molecules of
crystal water. Therefore these salts were linked with organochloro silanes
immediately in the reaction mixture. One mole of cyclic polyorganosiloxane
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Synthesis of α,ω -hexaorgano...

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B101/B186

and 1 mole of NaOH were kept in 50% alcohol and toluene between 80 and 90°C for 1 - 1.5 hrs. Water was then evaporated and 0.25 moles of 50% toluene solution of organodichloro silane was added dropwise between 10 and 25°C. After 10 - 15 min, 0.5 moles triorganochloro silane was added between 20 and 25°C, toluene was evaporated, and the polymer was distilled at 1-2 mm Hg. 0.8 moles dimethyl-dichloro silane, 0.4 moles trimethyl-chloro silane per mole of 1,3-disodium-1,3-dimethyl-1,3-diphenyl siloxanediol were found to be the optimum amounts for synthesizing polymers with a boiling point above 290°C at 1 - 2 mm Hg. Data are given for the following polymers

(yield, n_D^{20} , viscosity at 20°C (cs), and freezing point (°C)): Me_3SiO
 $-\left[(\text{PhMeSiO})_2-\text{Me}_2\text{SiO}-\right]_4(\text{PhMeSiO})_2\text{SiMe}_3$ 56.4, 1.5130, 457.2, -36; Me_3SiO
 $\left[(\text{Me}_2\text{SiO})_2-\text{PhMeSiO}-\right]_6(\text{Me}_2\text{SiO})_2\text{SiMe}_3$ 64.8, 1.4619, 134.5, -83; Me_3SiO
 $-\left[(\text{PhMeSiO})_4-\text{Me}_2\text{SiO}-\right]_2(\text{PhMeSiO})_6\text{SiMe}_3$ 54.5, 1.5241, 1580, -26; Me_3SiO
 $-\left[(\text{Me}_2\text{SiO})_4-\text{PhMeSiO}-\right]_3(\text{Me}_2\text{SiO})_4\text{SiMe}_3$ 38.7, 1.4410, 53.44, -104; Me_3SiO
 $\left[\text{Me}_2\text{SiO}-\text{PhMeSiO}\right]_6-\text{Me}_2\text{SiO}-\text{SiMe}_3$ 34.5, -, 78.7, -60; Me = CH_3 , Ph = C_6H_5 .

There are 4 tables.
Card 2/2

SOBOLEVSKIY, M.V.; NAZAROVA, D.V.; CHISTYAKOVA, L.A.; KIRILLINA, V.V.

Thermooxidative stability of polymethylphenylsiloxanes with
different end groups. Plast.massy no.3:13-16 '62. (MIRA 15:4)
(Siloxanes)

SOBOLEVSKIY, M.V.; CHISTYAKOVA, L.A.; NAZAROVA, D.V.; KIRILLINA, V.V.

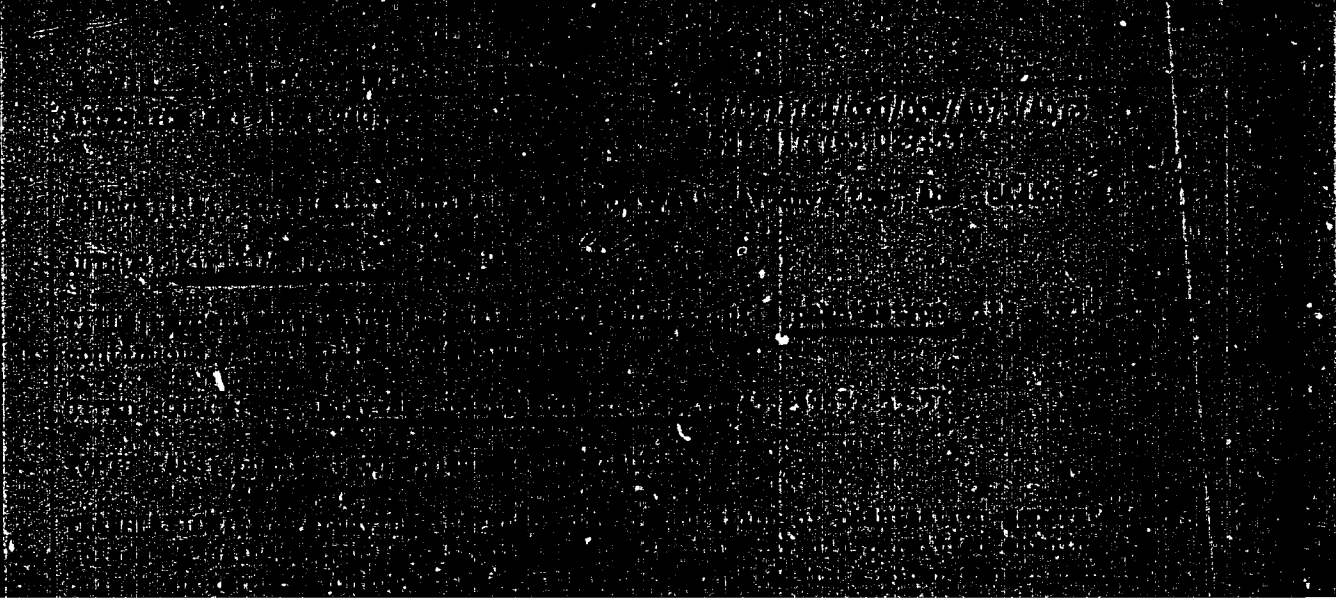
Synthesis of δ, ω -hexaorganopolydimethylpolymethylphenylsiloxanes
having regularly alternating dimethyl- and methylphenylsiloxy
links in the chain. Plast, massy no.10:17-21 '62. (MIRA 15:11)
(Siloxanes)

KIRILLIV, Yu.L.

[Structural diagram of the iron-carbon system] Diagramma sostoiانيا sistemy zhelezo--uglerod. Sverdlovsk, Gos.nauchno-tekhn.isd-vo po chernoi i tsvetnoi metallurgii, 1953. 61 p.
(MLRA 6:8)
(Steel alloys)

"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R000722620015-6

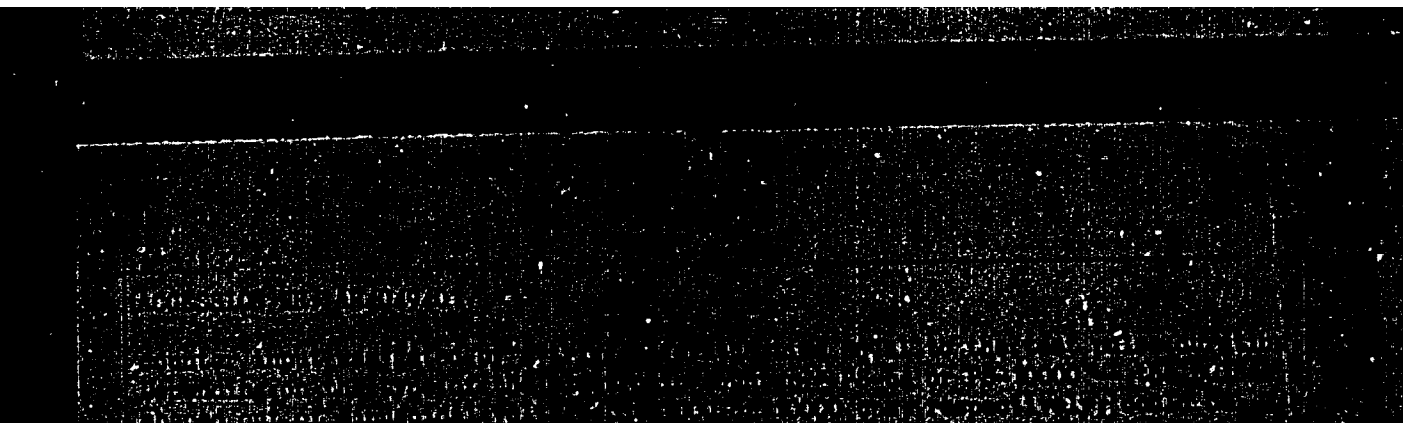


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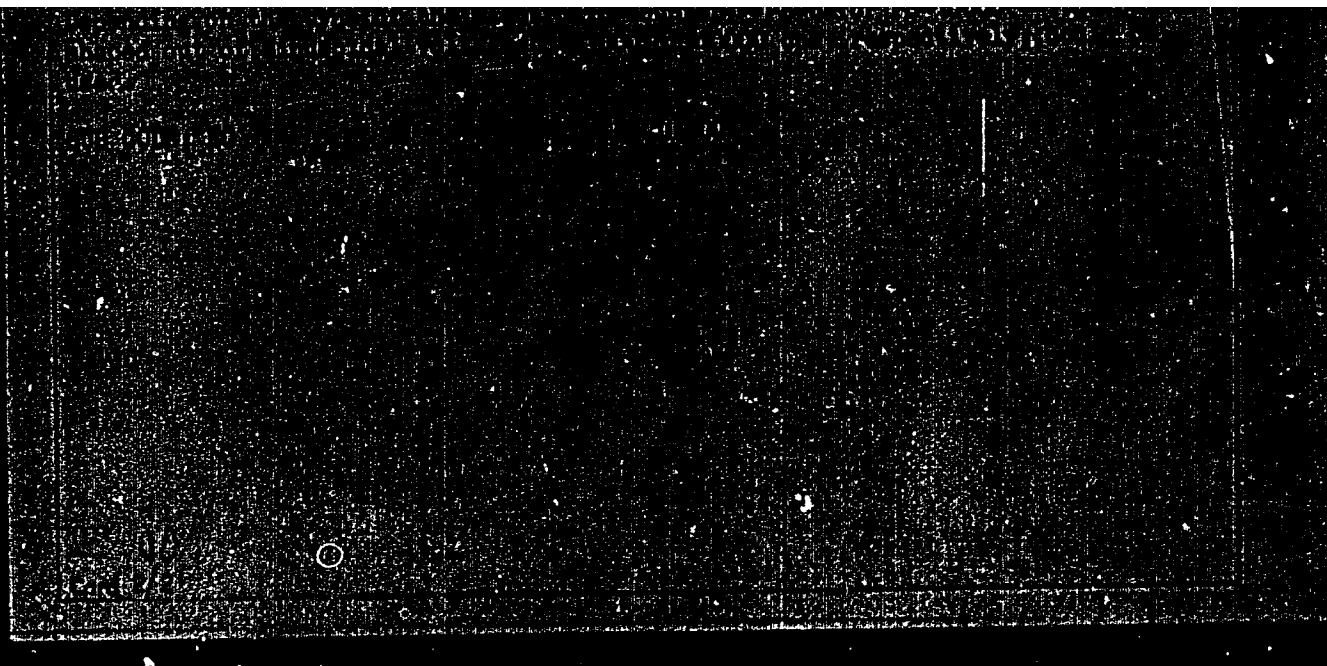


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KIRILLOV, A.

27-5-22/25

AUTHOR: Kirillov, A., Master of Trade School # 3, Molotov

TITLE: A School on the Rise (Uchilishche na pod'yame)

PERIODICAL: Professional'no -Tekhnicheskoye Obrazovaniye, May 1957,
5(144), p 32 (USSR)

ABSTRACT: The short article speaks of the deficiencies in school discipline, inefficiency in a number of groups, unsatisfactory leadership on the part of the foremen and deficient educational work which have now been overcome. For the past year the collective of the school workers and students have fulfilled the output of bench drilling machine tools "HC-12A", fitters' vises, etc. by 112%. Ten different devices have been manufactured which increased work efficiency by two to three times. The lathe and milling machine shops have been furnished with the newest type of starting and control equipment.

INSTITUTION: None

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.
Card 1/1

KIRILLOV, A.

27-12-15/27

AUTHOR: Kirillov, A., Foreman of Special Trade School # 3,
Perm Oblast'

TITLE: The Foreman's Part in Students' Extracurricular Work (Rol' мастера vo vneklassnoy rabote s uchashchimisya)

PERIODICAL: Professional'no - Tekhnicheskoye Obrazovaniye, 1957, # 12,
p 19-20 (USSR)

ABSTRACT: The author stresses the importance of the students' extra-class work and describes in this connection a few excursions made outside of the ordinary time where students had the possibility to become familiar with inventions in engineering and advanced labor methods. He further pictures the students' activity in art and sport circles, in organizing students' concerts, etc.

ASSOCIATION: Special Trade School # 3, Perm'Oblast (Spetsial'noye remeslennoye uchilishche No 3, Permskaya oblast')

AVAILABLE: Library of Congress

Card 1/1

KIRILLOV, A., podpolkovnik, kand.filosofskikh nauk

Prevention of war is the most important problem of our time.
Komm.Vooruzh.Sil 1 no.3:14-22 N '60. (MIRA 14:8)
(World politics) (War)

KIRILLOV, A., kand.tekhn.nauk, dotsent

Mechanical cutting of cooked root crop vegetables. Obshchestv.pit.
no.8:32-35 Ag '62. (MIRA 16:10)

KIRILLOV, A., polkovnik, kand. filosofskikh nauk

Victory of the U.S.S.R. in the Great Patriotic War and
the world revolutionary process. Komm. Vooruzh. Sil 46
no.6:9-16 Mr '65. (MIHA 18:11)

NEYMAN, I.I.; KIRILLINA, A.A.; VINOGRADSKIY, A.B.

Semiautoma ic drill with four boring bars for making lock seats.
Suggested by I.I.Neyman, A.A.Kirillina, A.B. Vinogradskii. Pat.
i izobr.predl.v stroi. no.16:44-45 '60. (MIRA 13:9)

1. Rabotniki derevoobrabatyvayushchego kombinata No.3 tresta
Glavmospromstroymaterialy Mosgorispolkoma, Moskva, 1-ya
Karacharovskaya ul, d.8.
(Drilling and boring machinery)

ARKHANGEL'SKIY, P.Ye.; BERNSETYN, A.M.; BYKOV, M.A.; DLUGACH, M.L.;
IL'YASHNEVSKIY, Ye.A.; KIRILLOV, A.A.; KOZLOVSKIY, A.S.; KHYLOV,
N.V.; LESOV, N.M.; MARTYNOV, P.T.; NIKANDROV, B.I.; PARUNIN,
V.Ye.; RUDANOV, M.L.; SINYAKOV, V.K.; PAL'KNER, O.G.; PEFRYAKOV,
A.I., red.; BALLOD, A.I., tekhn.red.

[Manual on the construction of farm buildings] Spravochnik po
sel'skokhoziaistvennomu stroitel'stvu. Moskva, Gos.isd-vo
sel'khoz.lit-ry, 1960. 704 p.

(Farm buildings)

(MIRA 13:12)

RUBINSHTEYN, A.L., professor; KIRILLOV, A.A., dotsent; MEF'YEVA, T.I., assistent;
MAKSIMOV, S.N., inzhener.

Method of forecasting the deformation of loess soil under hydrotechnical
structures. Gidr.i mel. 5 no.9:3-13 S '53. (MIRA 6:9)
(Soil mechanics)

MATTISEN, Anatoliy Ernestovich; KIRILLOV, Aleksandr Aleksandrovich;
POSPHLOV, Vladimir Nikolayevich; ISAYEV, A.I., spetsred;
KUZ'MINA, V.S., red.; KISINA, Ye.I., tekhn. red.

[Reference manual on hydraulic engineering in relation to fish
culture] Spravochnik po rybokhoziaistvennoi gidrotekhnike. Moskva,
Pishchepromizdat, 1958, 427 p. (MIRA 11:10)
(Fish culture) (Hydraulic engineering)

RUBINSHTEYN, A.L., professor, doktor tekhn.nauk; AREF'YEVA, T.I., kand.tekhn.
nauk; KIRILLOV, A.A., dotsent, kand.tekhn.nauk; PROLOV, N.N, inzh.

Problems in the design of hydraulic structures on loess soils.
Nauch.zap. MIIVKH 20:262-281 '58. (MIRA 13:6)
(Loess) (Soil mechanics)

YELISEYEV, M.A. , insh.; KIRILLOV, A.A. , insh.; CHUBAROV, N.D. , insh.

Modernization of milled peat harvesters. Torf.prom. 37 no.6:10-13
'60. (MIRA 13:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut torfyanoy promysh-
lennosti.

(Peat machinery)

SPIRIDONOV, Aleksandr Aleksandrovich; SEMKIN, Anatoliy Alekseyevich; PATSKEVICH, I.R., kand. tekhn.nauk, retsenzent; KIRILLOV, A.A., inzh., red.; DUGINA, N.A., tekhn. red.

[New equipment for automatic hard facing by semicircular weaving arc] Novoe oborudovanie dlia avtomaticheskoi vibrodugovoi naplavki. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961.
72 p. (MIRA 44:7)

(Hard facing--Equipment and supplies)

KIRILLOV, A.A., kand.tekhn.nauk

Effect of prolonged filtration on the compactibility of loess soils.
Nauch. zap. MIVKH 23:92-136 '60. (MIRA 14:8)
(Loess) (Soil mechanics) (Soil percolation)

AL'FORS, LARS [Ahlfors, Lars], prof.; LIPMAN, Boris, prof.; ZORICH, V.A.
[translator]; KIRILLOV, A.A. [translator]; SHABAT, B.V., red.;
PLUZHNIKOVA, N.I., red.; PRIDANTSEVA, S.V., tekhn. red.

[Space of Riemann surfaces and quasi-conformal mappings] Pro-
stranstva rimanovykh poverkhnostei i kvazikonformnye otobra-
zhenia. Pod red. B.V.Shabata. Moskva, Izd-vo inostr.lit-ry,
1961. 176 p. (MIRA 15:1)

(Rieman surface)

(Conformal mapping)

KIRILLOV, A.A., kand.tekhn.nauk, dotsent

Calculation of the foundation in case of the surface packing
soils with heavy tampers. Izv. TSKHA no.3:236-238 '61.

(MIRA 14:9)

(Foundations)

KIRILLOV, A.A.

Unit for cleaning and painting internal surfaces of pipes. *Bizn.-
tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekhn.inform. no.3:
32-33 '62.* (MIRA 15:5)
(Pipe, Steel--Cleaning) (Painting, Industrial)

YELISEYEV, M.A., inzh.; KIRILLOV, A.A., inzh.; CHUBAROV, N.D., inzh.

New FPU harvester for milled peat. Torf. prom. 37 no.5:29-32
'60. (MIRA 14:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut torfyanoy
promyshlennosti.

(Peat machinery)

KIRILLOV, A.A., kand. tekhn. nauk, dotsent

Building hydraulic structures for irrigation purposes in loess
soils. Izv. TSKHA no.1:139-158 '63. (MIRA 16:7)

(Loess) (Irrigation) (Hydraulic engineering)

KIRILLOV, A.A., kand.tekhn.nauk; BERGER, F.Ye., inzh.; KORMILITSYN, R.R.,
inzh.; SINYAKOV, V.K., inzh.

Adhesion of freshly placed concrete to "old" concrete. Gidr.stroi.
32 no.7:28-29 JI '62. (MIRA 15:7)
(Concrete construction)

KIRILLOV, A.A., kand.tekhn.nauk, dotsent; SINYAKOV, V.K., kand.tekhn.
nauk; DAVYDOV, Yu.S., inzh.

Steepness of slopes of underwater trenches. Izv. TSKHA no.3:195-
199 '63. (MIRA 16:9)

(Hydraulic structures)

KIRILLOV, A.A.; SINYAKOV, V.K.; DAVYDOV, Yu.S.

Determining the slope of embankments of underwater pipeline
trenches in loose soils. Stroi. truboprov. 8 no.8:14-16
Ag '63. (MIRA 16:11)

KIRILLOV, A.A.; FROLOV, N.N.; ORLOVA, V.P., red.; DEYEVA, V.M.,
tekhn. red.

[Hydraulic structures in irrigation systems on sagging
loess soils] Gidrotekhnicheskie sooruzhenia na orositel'-
nykh sistemakh v lessovykh prosadochrykh gruntakh. Mo-
skva, Sel'khozizdat, 1963. 270 p. (MIRA 17:2)

KIRILLOV, A.A.

AUTHOR: KIRILLOV, A.A.

20-4-4/51

TITLE: The Representation of the Groups of Rotation of the n-Dimensional Euclidean Space by Spherical Vector Fields (Predstavleniya gruppy vrashcheniy n-mernogo evklidova prostranstva sfericheskimi vektornymi polyami)

PERIODICAL: Doklady Akad.NaukSSSR, 1957, Vol.116, Nr.4, pp.538-541 (USSR)

ABSTRACT: Let S_n be the sphere with the equation $\sum_{i=1}^{n+1} x_i^2 = 1$. Let $R^{(n)}$ be the

totality of continuous vector fields which tangent S_n . The author decomposes $R^{(n)}$ into subspaces being invariant and irreducible with respect to the group of all rotations of S_n and he gives schemes of the corresponding representations by gradient fields and spherical functions on S_n and by rotational

Card 1/1 fields on S_n .

ASSOCIATION: Moscow State University im. M.V. Lomonosov (Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova)

PRESENTED BY: A.N. Kolmogorov, Academician, April 2, 1957

SUBMITTED: March 29, 1957

AVAILABLE: Library of Congress

OLEYNIK, O.A.; KIRILLOV, A.A. (Moskva)

Twentieth mathematics contest in Moscow schools. Mat. pros.
no.3:221-227 '58. (MIRA 11:9)
(Moscow--Mathematics--Competitions)

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SOV/155-58-6-25/36

AUTHOR: Kirillov, A.A.

TITLE: Vector- and Tensor Fields in Symmetric Spaces

PERIODICAL: Nauchnyye doklady vysshey shkoly. Fiziko-matematicheskiye nauki,
1958, Nr 6, pp 152-157 (USSR)

ABSTRACT: Let M be a smooth manifold, the measure and metric of which are invariant with respect to motions from the group of motions G . The square integrable functions on M form a Hilbert space with the scalar product $(f, g) = \int_M f(M) \overline{g(M)} d\mu$. If in the space of the vector fields on M the scalar product $(v, w) = \int_M (V(M), W(M)) d\mu$ is introduced, where the scalar product $(V(M), W(M))$ of the vectors $V(M)$ and $W(M)$ is defined with the aid of the invariant metric, then the vector fields also form a Hilbert space with $\int_M |V(M)|^2 d\mu < \infty$. The Hilbert space of the tensor fields on M is analogously constructed. In all

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Vector- and Tensor Fields in Symmetric Spaces

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these spaces there originate unitary representations of \mathfrak{g} which are decomposed into direct sums of finite-dimensional irreducible representations. The problem arises: in the l -dimensional grid of the weights of all representations of \mathfrak{g} there is to be described the subset of those weights to which there correspond representations which are realized in the Hilbert spaces defined above. The author follows the constructions of Ye.B. Dynkin [Ref 3] and states that the weights of the representations which are realized in the tensor fields on M , form "hyperplanes" which are parallel with the "subspace" of the weights of those representations which are realized in the functions on M . Dynkin conjectured that the number of these "hyperplanes" be finite. The author shows that this conjecture holds true for every homogeneous space with a semisimple group of motion. For symmetric spaces M it even holds: the sum of the multiplicities of the "hyperplanes" is $\leq n^k$, where n is the dimension of M and k the rank of the tensor field. The estimation is attained in

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Vector- and Tensor Fields in Symmetric Spaces

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vector fields on groups and is not attained in vector fields on spheres with dimension > 3 .

The author thanks Ye.B. Dynkin for the guidance of the paper.

There are 4 references, 2 of which are Soviet, 1 French, and 1 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova
(Moscow State University imeni M.V. Lomonosov)

SUBMITTED: October 8, 1958

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~~16(1)~~ 16.2200

AUTHOR: Kirillov, A.A.

SOV/20-128-5-5/67

TITLE: Induced Representations of Nilpotent Lie Groups

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 5, pp 886-889 (USSR)

ABSTRACT: The author uses the method of induced representations in order to describe all irreducible unitary representations of nilpotent Lie groups. Especially he shows that each such representation is realized on a certain homogeneous manifold in the space of all square-summable functions. The representation operators in this space are translations which are multiplied with a certain function. The author considers in detail: Definition and properties of the induced representations (according to Bruhat [Ref 37]), the representations of nilpotent groups with a unidimensional center and irreducible unitary representations of connected nilpotent Lie groups.

The author thanks Professor I.M.Gel'fand for the guidance of the paper.

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Induced Representations of Nilpotent Lie Groups SOV/20-128-5-5/67

There are 5 non-Soviet references, 2 of which are American,
and 3 French.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova
(Moscow State University imeni M.V.Lomonosov)

PRESENTED: May 29, 1959, by I.G.Petrovskiy, Academician ✓

SUBMITTED: May 29, 1959

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3

16(1)

AUTHOR:

Kirillov, A.A.

S/020/60/130/05/003/061

TITLE:

Unitary Representations of Nilpotent Lie Groups ✓

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 966-968 (USSR)

ABSTRACT:

The author transfers results of Dixmier [Ref 1] to arbitrary unitary irreducible representations of connected nilpotent Lie groups. The results obtained are already contained in the paper [Ref 3] of Dixmier, a fact stated by the author of the present paper in a remark added in proof.

There are 2 references, 1 of which is Soviet, and 1 French.

ASSOCIATION:

Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova
(Moscow State University imeni M.V. Lomonosov)

PRESENTED:

October 27, 1959, by I.G. Petrovskiy, Academician ✓

SUBMITTED:

October 21, 1959

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KIRILLOV, A.A.

Problem formulated by I.M. Gol'fand. Dokl. AN SSSR 137 no.2:276-277
Mr '61. (MIRA 14:2)

1. Moskovskiy gosudarstvennyy universitet im.K.V.Lomonosova. Pred-
stavleno akademikom I.G.Petrovskim.
(Hyperspace)

GEL'FAND, I.M. (Moskva); DYUDENI, N.Ye. (SShA); KIRILLOV, A.A. (Moskva);
PODSYPANIN, V. (Tula); TER-MERTACHAN, M. (Yerévan); KUZ'MIN, Yu.I.
(Moskva); VEYL', G. (SShA); FADDEYEV, D.K. (Leningrad); ARNOL'D,
V.I. (Moskva); IVANOV, V.F. (San-Karlos, Kaliforniya, SShA);
GRAYEV, M.I. (Moskva); LEBEDEV, N.A. (Leningrad); IOPSHITS, A.M.
(Moskva); ZHITOMIRSKIY, Ya.I.; MITYAGIN, B.S. (Moskva); SKOPETS,
Z.A. (Yaroslavl'); PUANKARE, A. (Frantsiya); GAVEL, V.V. (Brno,
Chekhoslovakiya); SOLOMYAK, M.Z. (Leningrad); LEVIN, V.I. (Moskva);
BARBAN, M.B. (Tashkent); FRIDMAN, L.M. (Tula)

Problems. Mat. pros. no.5:253-260 '60. (MIRA 13:12)
(Mathematics--Problems, exercises, etc.)

KIRILLOV, A.A.

Unitary representations of nilpotent Lie groups. Dokl. AN SSSR 138
no.2:283-284, My '61. (MIRA 14:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
Predstavleno akademikom I.G. Petrovskim.
(Groups, Theory of) (Transformations (Mathematics))

KIRILLOV, A. A., Cand. Phys-Math. Sci. (diss) "Unitary Representations of Nil-Potent Groups L1." Moscow, 1961, 4 pp. (Moscow State Univ.) (Mechanical-Mathematical Faculty) 200 copies (KL Supp 12-61, 251).

KIRILLOV, A.A.

Unitary representations of nilpotent Lie groups. *Usp. mat.nauk*
17 no.4:57-110 '62. (MIRA 15:8)

(Groups, Theory of)

KIRILLOV, A.A.

Infinite-dimensional representations for a complete matrix group.
Dokl.AN SSSR 144 no.1: 37-39 My '62. (MIRA 15:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
Predstavleno akademikom I.G.Petrovskim.
(Groups, Theory of)

KIRILLOV, A. A.

"Unitary representations of nilpotent Lie groups"

report submitted at the Intl Conf of Mathematics, Stockholm, Sweden,
15-22 Aug 62

ARNOL'D, V.I.; KIRILLOV, A.A.; SINAY, Ya.G.

Dynamic systems and representations of groups at the Stockholm
Mathematical Congress. Usp. mat. nauk 18 no.2:189-196 Mr-Apr
'63. (MIRA 16:8)

(Mathematics--Congresses)

KIRILLOV, A.A.

Infinite-dimensional unitary representations of a group of second-order matrices with elements from a locally compact field. Dokl. AN SSSR 150 no.4:740-743 Je '63.

(MIRA 16:6)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
Predstavleno akademikom I.G. Petrovskim.
(Groups, Theory of)

KIRILLOV, A.A.

Unitary representation of the nilpotent Lie groups. Analisa mat
17 no.4:3-59 0-D '63.

KIRILLOV, A.A.

Symposium on Algebraic Groups and their Representations.
Usp. mat. nauk 19 no. 1:225-228 Ja-F '64. (MIRA 17:6)

ABSTRACT.

Positively defined functions on a group of matrices with elements from a discrete field. Dokl. Akad. Nauk SSSR, No. 156,

(1964), 13-5.

L. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
Submitted December 4, 1963.

GOL'FAND, I.M.; GLAGOLEVA, Ye.G.; KIRILLOV, A.A.

[The coordinate method] Metod koordinat. Moskva, Nauka,
1965. 70 p. (Biblioteka fiziko-matematicheskoi shkoly.
Matematika, no.1) (MIRA 18:8)

KIRILLOV, A.A.

Allowing for packing in determining the volume of ice. Probl. Arkt.
no.2:53-58 '57. (MIRA 11:12)
(Ice)

K. Rille J. A. A.
KIRILOV, A. A.

"Classification of Arctic Ice and Its Distribution in the Soviet Sector of the Arctic,"

paper presented at Arctic Sea Ice Conf. Feb. 1958. (24-27 Feb 1958) Easton, Md.

All-Union Arctic Scientific Research Inst, Moscow

Eval: B 3,105,353, 23 May 58
Available in Library

KIRILLOV, A.A.

Long-range forecasts of ice conditions in the Arctic seas and
their reliability. Probl. Arkt. i Antarkt. no. 4:26-37 '60.

(MIRA 13:12)

(Arctic regions--Sea ice)

KIRILLOV, A.A.

Plenum of the Oceanographic Commission. Probl.Arkt.i Antarkt.
no.5:82 '60. (MIRA 14:4)

(Oceanographic research)

S/169/62/000/001/068/083
D228/D302

AUTHORS: Gordiyenko, P. A. and Kirillov, A. A.

TITLE: State of the practical application of long-term ice forecasts on the northern sea-way and problems related to introducing new techniques

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 1, 1962, 20, abstract 1V120 (Tr. Okeanogr. komis. AN SSSR, 11, 1961, 21-28)

TEXT: The development of regular long-term ice forecasts for the whole route of the norther sea-way was started at the Arkticheskiy institut (Arctic Institute) in 1940. Latterly the degree to which forecasts can be prepared in advance has become much greater (8 - 10 months), their quantity has increased to 6 a year, and the number of prognostic indicators has grown from 15 - 20 to 140 - 150. The justifiableness of the forecasts has grown considerably, especially in the last five years. A detailed analysis of the justifiableness of ice forecasts according to different indicators, according

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State of the practical ...

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D228/D302

to the years, and according to all the seas of the Soviet Arctic is made in the article. The accuracy of forecasting largely depends on the quality of synoptic forecasting which as yet is still low. Further development of the method of long-term forecasts should proceed along the lines of a more profound study of the interrelation between processes in the atmosphere and hydrosphere, with the aim of seeking the general laws revealing the mechanism of the ice-sheet's formation and disintegration. In conclusion, problems connected with putting new ice breakers into operation are considered, a number of measures for guaranteeing pre-vernal and post-autumnal navigation being noted in particular. / Abstractor's note: Complete translation. /

Card 2/2

KIRILLOV, A.A.; KUZNETSOV, I.M.

New requirements of ice studies at polar stations. Probl. Arkt.
i Antarkt. no.12:15-17 '63. (MIRA 16:7)
(Polar regions--Ice)

KIRILLOV, A.A.; NIKIFOROV, Ye.G.

Conference of research workers from Arctic observatories. Probl.
Arkt. i Antarkt. no.12:139-141 '63. (MIRA 16:7)
(Arctic regions)

KIRILLOV, A.A.; SPICHKIN, V.A.

Calculation of the earliest possible dates of breaking fast ice
with icebreakers using the "tandem" method. Probl. Arkt. i Antarkt.
no.19:62-63 '65. (MIRA 18:5)

KIRILLOV, A. A.

USSR/Engineering
Welding, Arc
Machinery - Construction

Feb 49

"Triphase Arc Welding in the Urals Machine Works," G. P. Mikhailov, V. V. Stepanov,
A. A. Kirillov, Engineers, 1 $\frac{1}{4}$ pp

"Avtogennoye Delo" No 2

High quality of welded connections and fused metals, as well as high productivity, and economy of electric power make possible the use of triphase arc welding for all items now welded by single-phase method. This was confirmed under industrial conditions. Gives two tables of experimental results.

PA 42/49T22

KIRILLOV, A. A.

Avtomaticheskia svarka trekhfaznet dugoi. Sverdlovsk. Mashgiz, 1956. 7 p.

Automatic three-phase arc welding.

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

KIRILLOV, AA.

KUZNETSOV, A.P.; KIRILLOV, A.A., inzhener, retsentsent; BOGDANOV, A.V.,
inzhener, redaktor.

[Assembling welded metal structures; advanced training manual for
workers] Sborka svarnykh metallicheskih konstruksii; uchebnoe po-
sobie dlia povysheniia kvalifikatsii rabochikh. Sverdlovsk, Gos.
nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry [Uralo-Sibirskoe
otd-nie] 1953. 147 p. (MLRA 7:6)

(Electric welding) (Building, Iron and steel)

KIRILLOV, A.A.

MIKHAYLOV, G.P.; KIRILLOV, A.A.; SMERGACHNY, M.P.; AKHUN, A.I., kandidat
tekhnicheskikh nauk, rezensent; KRYLOV, M.P., inzhener, redaktor.

[Production of welded metal constructions] Proizvodstvo svarnykh me-
tallicheskikh konstruktsei. Sverdlovsk, Gos. nauchno-tekhn. izd-vo
mashinostroit.i sudostroit. lit-ry [Uralo-Sibirskoe otd-nie] 1953.
276 p. (MIRA 7:6)

(Welding)

STEPANOV, V.V.; KIRILLOV, A.A.; MIKHAYLOV, G.P., doktor tekhnicheskikh nauk, redaktor; DOGIRA, N.A., tekhnicheskiy redaktor.

[Instructions on three-phase electric arc welding] Rukovodiashchie materialy po svarke trekhfaznoi dugoi. Pod red. G.P.Mikhailova. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. i sudostroit. lit-ry, 1954. 95 p. (MLBA 8:1)
(Electric welding)

KIRILLOV, A. A.

LYUBLIN, Isay Samuylovich; KIRILLOV, A.A., inzhener, retsenzent; AKHUN, A.I.,
kand.tekhn.nauk, red.; SARAFANNIKOVA, G.A., tekhn.red.

[Generators and transformers for arc welding] Generatory i trans-
formatory dlia dugovoi svarki. Pod red.A.I.Akhuna. Moskva, Gos.
nauchno-tekhn.isd-vo mashinostroit.lit-ry, 1957. 60 p. (Nauchno-
populiarnaiia biblioteka rabochego-svarshchika, no.5) (MIRA 10:12)
(Electric generators) (Electric transformers) (Electric welding)

PHASE I BOOK EXPLOITATION 1113

Ural'skiy zavod tyazhelogo mashinostroyeniya, Sverdlovsk

Svarochnoye proizvodstvo (The Welding Industry) Moscow, Mashgiz,
1958. 126 p. (Series: Its: Sbornik statey, vyp. 6) 4,000
copies printed.

Eds.: Stepanov, V. V., Candidate of Technical Sciences and
Kirillov, A. A., Engineer; Executive Ed. (Ural-Siberian Division,
Mashgiz): Bezukladnikov, M. A., Engineer.

PURPOSE: This book is intended for welding engineers and technicians.

COVERAGE: This is a collection of articles published in connection
with the 25th anniversary of the Ural'skiy zavod tyazhelogo
mashinostroyeniya imeni S. Ordzhonikidze (Ural Heavy Machinery
Plant imeni S. Ordzhonikidze) and dealing with developments in
the field of welding during the 25 years of the plant's existence.
The most interesting investigations dealing with the improvements
of quality and the increase of productivity of welding operations
are described. The first article deals with the history of the
development of metal structures, welding, and flame surface

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The Welding Industry

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hardening. The second deals with the application of automatic welding, and the third with investigations on new SK-4 electrodes. The fourth article describes a method of determining regimes of flame surface hardening and the fifth, seventh, and last deal with investigations of the weldability of martensitic stainless chrome steel, low-carbon low-alloy steel of increased strength, and grade 10KhGSND (MS-1) steel. The sixth article deals with carbon-dioxide-shielded welding with a consumable electrode.

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Stepanov, V.V.; Krok, A.N.; and <u>Kirillov, A.A.</u> SK-U Electrodes for Electric-arc Welding	28

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Stepanov, V.V. Investigation of the Weldability of Martensitic Stainless Chrome Steel		50
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SOV/137-59-3-5759

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 114 (USSR)

AUTHOR: Kirillov, A. A.

TITLE: A History of the Development of the Fabrication of Metal Structures, Welding Operations, and Flame-processing Techniques at the Ural-mashzavod (Istoriya razvitiya proizvodstva metallokonstruktsiy, svarki i gazoplamennykh protsessov na Uralmashzavode)

PERIODICAL: Sb. statey. Ural'skiy z-d tyazh. mashinostr. im. S. Ordzhonikidze, 1958, Nr 6, pp 3-16

ABSTRACT: A survey of the development of operations of O₂ cutting, surface hardening with a C₂H₂-O₂ flame, standard arc and automatic submerged-arc welding processes, electro-slag welding, and hard-alloy surfacing. Owing to improved design and the introduction of rational technological processes, the operating efficiency of the plant increased two-fold over the period of the last ten years. Such progress is attributable to the following factors: 1) Employment of welded and cast-welded design, which significantly reduces the weight of the structures; 2) employment of rational pattern-layout procedures ensuring increased output of sound metal; 3) welding of completely machined components

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SOV/137-59-3-5759

A History of the Development of the Fabrication of Metal Structures (cont.)

onto the major structure; 4) employment of plug welds in order to prevent distortion of thin sheet-metal articles; 5) employment of numerous types of specially designed equipment.

G. K

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Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 136 (USSR)

AUTHORS: Stepanov, V.V., Krokh, A.N., Kirillov, A.A.

TITLE: "SK-U" Electrodes for Electric Arc Welding

PERIODICAL: Sb. statey, Ural'skiy z-d tyazh. mashinostr. im. S. Ordzhonikidze, 1958, Nr 6, pp 28 - 40

ABSTRACT: Weld joints with flaky surfaces are more prone to rusting under tropical conditions than weld joints with smooth surfaces. In this connection "K5A" electrodes were replaced by new "SK-U" electrodes ensuring the formation of angular and butt welds with minimum flake formation on the surface (when welding in lower position). These electrodes correspond to the "E50A" type of GOST-2523-51 and are designed for welding medium-carbon steel. The composition of the coating (in %): fluorspar 18, chalk 23, Ti dioxide (electrode type) 7.5, Fe-Si (45%) 7.5, Fe-Mn 7.5, kaolin 6.5, Fe-powder, group A and B 30, water glass 25. Thicknesses of 1.25 - 1.35, 1.4 - 1.5 and 1.45 - 1.5 mm are recommended for the coating of electrodes of

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"SK-U" Electrodes for Electric Arc Welding

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4 mm, 5 mm and 6 mm diameter, respectively. Wire of Sv08 and Sv08A grade is used. Welding is possible in all spatial positions of the seam and is carried out with a short d-c arc of reverse polarity. The mechanical properties of the seam metal are $\sigma_b \approx 50 \text{ kg/mm}^2$, a_k 12 - 20 kgm/cm^2 at room temperature. At -40°C , a_k decreases down to 10 - 15 kgm/cm^2 . The electrodes are not sensitive to rust. The seam metal did not show a considerable reduction of a_k after heating up to 650°C , water quenching and holding for ten days, and after mechanical aging. The following characteristics of electrode melting are given: $\alpha_r = 10.4 \text{ g/a.hour}$; $\alpha_n = 10.7 \text{ g/a . hour}$. HH

O.K.

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18.7200

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 121 (USSR)

AUTHOR: Kirillov, A.A.

TITLE: Investigation Into Weldability of 10KhGSND (MS-1) Grade Steel

PERIODICAL: Sb. statey Ural'skiy z-d tyazh. mashinostr. im. S. Ordzhonikidze, 1958, Nr 6, pp 121 - 127

ABSTRACT: The author investigated the mechanical properties and the micro-structure of the fused metal in the zone adjacent to the weld joint and in the base metal of 10KhGSND grade steel, welded by the electric slag method. Plates of 740 x 650 x 250 mm dimensions were welded under AN-8M flux on the A-372M automatic machine. The welding process was carried out with the use of two Sv.10GS filler wires of 3 mm diameter. The current was 450 - 500 amps, the voltage was 52 v. The transverse displacement of the tips was 47.5 m/hr and the vertical displacement was 0.4 m/hr. After welding, the joint was subjected to the following heat treatment: 1) normalization at 950 - 970°C and subsequent air cooling down to 350°C; 2) tempering at 680°C, cooling in the furnace to 400°C, then air-

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Investigation Into Weldability of 10KhGSND (MS-1) Grade Steel

cooling. Tensile specimens of 10 mm diameter were cut out of the deposited metal along and across the seam axis. The distances between the specimen axis and the border of fusion of the joint with the base metal were 5 and 15 mm. These distances were 5 and 10 mm for specimens cut out of the zone adjacent to the weld joint. a_k of the deposited metal was determined on specimens whose axes had a distance of 15 mm from the fusion border. In specimens cut out of the zone adjacent to the seam, the notch was located on the fusion border and at a distance of 1 - 1.5 mm from it. In each case, 4 to 6 specimens were tested. Mechanical properties of the base metal were assumed as 100% (σ_b 51.3 kg/mm², σ_s 36.4 kg/mm², δ 26.1%, ψ 44.7%, a_k 10.5 kgm/cm²). It was established that σ_b was reduced not over 2% in the fused metal and in the zone adjacent to the weld joint; that the maximum reduction of σ_s was 7%, if the axis of the specimen was located at a distance of 15 mm from the fusion border; that δ was raised by 2 - 22%, and a_k increased by 44 - 81%. The structures of the deposited metal and of the zone

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Investigation Into Weldability of 10KhGSND (MS-1) Grade Steel

adjacent to the seam are fine-grained in all cases. Defects do not exist, the alloyage of the base metal with the deposited metal is normal. The author presents diagrams of specimens, microstructures and tables of mechanical properties.

V.B.

Card 3/3

✓

SHATOV, Anatoliy Anatol'yevich; KIRILLOV, A.A., inzh., retsenzent;
DUGINA, N.A., tekhn. red.

[Arc welding of steel] Dugovana svarka stali. Moskva, Mashgiz,
1961. 52 p. (Nauchno-populiarnaya biblioteka rabochego-
svarshchika, no.10) (MIRA 15:4)
(Steel--Welding)

FISHBEYN, Noy Borisovich; KIRILLOV, A.A., inzh., ratsenzent; DUGINA, N.A., tekhn. red.

[Electrodes and fluxes for arc welding] Elektrody i fliusy dlia dugovoi svarki. Moskva, Mashgiz, 1961. 59 p. (Nauchno-populiarnaia biblioteka rabochego-svarshchika, no.9)

(MIRA 15:3)

(Electric welding--Equipment and supplies)

82019
S/056/60/038/02/20/061
B006/B011

24.6810

AUTHORS: Viryasov, N. M., Vovenko, A. S., Vorob'yev, G. G.,
Kirillov, A. D., Kim Khi In, Kulakov, B. A., Lyubimov, A. L.,
Matulenko, Yu. A., Savin, I. A., Smirnov, Ye. V., Strunov,
L. N., Chuvilo, I. V.

TITLE: Channel for Antiprotons¹⁹ With a Momentum of 2.8 Bev/c

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
Vol. 38, No. 2, pp. 445-448

TEXT: The authors of the present paper describe a channel built for the investigation of the interaction of antiprotons in a cloud chamber. Antiprotons were produced by 9-Bev protons in a target. Fig. 1 is a schematic representation of the channel described in the following. The antiprotons were identified from their velocity ($\beta = 0.95$) by means of three Cherenkov counters, each of which was provided with two photomultipliers of the type $\phi\text{ЭУ-33}$ (FEU-33) whose efficiencies are specified in Table 1. The efficiencies attained with different coincidence combinations are given in Tables 2 and 3. Fig. 2 shows a block diagram of the electronic

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Channel for Antiprotons With a Momentum of 2.8 Bev/c

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system, and respective data are supplied in Table 4. The efficiency of the scheme described with respect to antiprotons is found to be 60-40%. Some tests are briefly described next. By the system discussed here, the authors determined the ratio of the number of \bar{p} with momenta of (2.8±15) Bev/c to the number of all remaining particles (which were chiefly π^- -mesons) from the beryllium target (36g/cm²) under the angles 0 and 7°, and from a copper target (~180 g/cm²) under 7° with respect to the primary proton beam (8.1 - 8.9 Bev). At an intensity of 10⁹p of the inner beam, an average of 1 \bar{p} was recorded within four minutes. Results:

Angle	target	proton beam intensity	particle number in the channel	relative number of anti-protons in the beam
0°	Be	10 ⁹	1000	(1.03±0.13).10 ⁻⁴
7°	Be	10 ⁹	~700	(1.37±0.18).10 ⁻⁴
7°	Cu	10 ⁹	~700	(2.42±0.53).10 ⁻⁴

The number of particles recorded in the channel agrees with data concern-

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Channel for Antiprotons With a Momentum of 2.8 Bev/c

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B006/B011

ing 9-Bev proton interactions in emulsions (Ref. 4). The increase in the relative number of antiprotons in the transition from 0 to 7° in the laboratory system agrees with predictions made on the strength of the statistical theory. By considering pion absorption ($\sigma_t \sim 30$ mb) and anti-proton absorption ($\sigma_t \sim 60$ mb) as well as the attenuation of the beam of primary protons ($\sigma_{in} \sim 30$ mb), the ratio of the differential production cross sections of \bar{p} and π^- -mesons with 2.8 Bev/c under 0° in the laboratory system is found to be

$$\frac{d^2\sigma_{\bar{p}}}{d\Omega dp} / \frac{d^2\sigma_{\pi^-}}{d\Omega dp} \approx 1.5 \cdot 10^{-4} .$$

There are 2 figures, 5 tables, and 4 references: 3 Soviet, 1 Italian, and 1 International (CERN).

ASSOCIATION: Ob'yedinenny institut yadernykh issledovaniy
(Joint Institute of Nuclear Research)

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SUBMITTED: September 3, 1959

Card 3/3

20677

S/120/61/000/001/008/062
E032/E314

21.5300

AUTHORS: Belyakov, A.N., Vovenko, A.S., Kirillov, A.D.,
Kulakov, B.A., Lyubimov, A.L., Matulenko, Yu.A. and
Savin, I.A.

TITLE: Gas-filled Threshold Cherenkov Counters for
Accelerator Experiments

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No. 1,
pp. 32 - 35

TEXT: The velocity analysis of fast particles ($\beta \approx 1$) by
Cherenkov counters, using the dependence of the threshold or
angle of Cherenkov emission on the velocity, is possible if
the refractive index of the medium is close to unity. This
condition is satisfied only by gaseous media. The present
paper describes two gas-filled Cherenkov counters. One of
them (supplied by Yu.A. Troyan, L.S. Okhrimenko and
S.V. Mukhin) was an experimental counter which was used in
studies designed to establish whether it is possible to
separate out rare particles against a background of other
particles. The second counter was designed for work in the

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Gas-filled Threshold

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π^- and K-meson beams of the synchrophasotron of the Joint Institute for Nuclear Research. The first of the above counters is shown in Fig. 1, in which 1 - is the steel body, 2 - is a glass tube 30 mm in diameter and covered with a film of aluminium on the inner surface, 3 - is a hollow light pipe, 4 - is a perspex window and 5 - is an FEU-33 (FEU-33) photomultiplier. Fig. 2 shows the second of the above counters, in which 1 is the steel body, 2 is a polished dural tube, 80 mm in diameter and coated with an organic film and then an aluminium film on the inner surface, 4 is a quartz window and 5 is an FEU-33 photomultiplier. The first counter (C_1) was used in the π^+ meson beam of the synchrocyclotron of the Joint Institute of Nuclear Research. The energy was 300 MeV. The second counter (C_2) was used in the beam of positive particles of the synchrophasotron of the above institute (largely π^- -mesons and protons) the momentum being ~ 3 GeV/c. In both cases, the Cherenkov counter was

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EO32/E314

Gas-filled Threshold

connected in coincidence with a scintillation monitor telescope whose counters had a diameter slightly smaller than the diameter of the Cherenkov counter. The Cherenkov counter was arranged as shown in Fig. 3. C in this figure represents the scintillation counters, YP 1a represent amplifiers, the rectangular block in the centre of the figure indicates the position of the Cherenkov counter and the three rectangular blocks on the righthand side of the figure are coincidence circuits with resolving times as indicated. In these experiments the ratio $m = N_2/N_3$ was measured. Fig. 4 shows the ratio m as a function of pressure in atmospheres for the C_1

counter (filled with air). Curve a refers to a kinetic energy $E_k^{\pi^+} = 297$ MeV and Curve b to $E_k^{\pi^+} = 280$ MeV .

$p_{\mu}^a, p_{\mu}^b, p_{\pi}^a, p_{\pi}^b$ indicate the threshold pressures of the a and b curves for μ and π -mesons, respectively. Curve b was taken with a telescope containing a Cherenkov counter which was more sensitive to μ -mesons than π -mesons.

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E032/E314

Gas-filled Threshold

Fig. 5 shows the ratio m as a function of pressure in atm. for the C_1 counter filled with ethylene

($E_k^+ = 392$ MeV). It is clear from Figs. 4 and 5 that it is possible to separate out μ -mesons in a beam of π -mesons. Fig. 6 shows the dependence of m on the pressure for the C_2 counter filled with air. This curve was obtained for a beam containing 40% π -mesons and 60% protons. p_μ and p_{π^-} show the threshold pressures for μ - and π -mesons. It is concluded that particle separation is possible with these counters. There are 6 figures and 1 non-Soviet reference.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy
(Joint Institute of Nuclear Research)

SUBMITTED: February 13, 1960

Card 4/7

MIKHAYLOV, M.V., kand. biol. nauk, otv. red.; KUSENIRENKO, M.D.,
kand. biol. nauk, red.; DASHKEYEVA, K.N., kand. biol.
nauk, red.; KIRILLOV, A.F., ml. nauchn. sotr., red.

[Problems in the physiology of frost and drought resistance
of fruit trees and grapes] Voprosy fiziologii zimostoičnosti
i zasukhoustoichivosti plodovykh i vinograda. Kishinev,
Kartia molodoveniaske, 1965. 117 p. (MIRA 18:11)

1. Akademiya nauk Moldavskoy SSR. Institut fiziologii i
biokhimii rastenii.

MIKHAYLOV, M.V.; KIRILLOV, A.F.

Some causes of the physiological incompatibility of grafting
components causing the death of grafted grapevines. Izv.AN
Mold.SSR no.4:53-62 '63. (MIRA 18:1)

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Mechanized tunneling using light-gauge heading machines. Gor.
khoz.Mosk. 34 no.2:28-32 F '60. (MIRA 13:6)

1. Institut "Mosinshproyekt."
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8(6)

SOV/143-58-11-15/16

AUTHORS:

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TITLE:

The Influence of Experimental Turbine Vibration on the Test Accuracy

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy, Energetika, 1958, Nr 11, pp 116-125 (USSR)

ABSTRACT:

The rapid development of power engineering in the USSR requires experiments for improving the flow area of different turbine designs. Contemporary requirements for the accuracy of aerodynamic experiments are very high. Deviations of test data obtained by using the same experimental unit often cannot be explained by errors of the aerodynamic and other instruments used for the experiments. These differences reduce the confidence in utilizing experimental data which decreases the effectiveness of the very important and complicated experimental work. At BITM those physical phenomena on experimental turbines were investigated which may cause errors in the test results and which frequent-

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ly escape the attention of the experimental investigator. The explanation of mechanical vibration losses is a part of this investigation. The influence of such losses cannot be avoided completely and sometimes it attains a considerable importance, since experimental turbines work in a wide range of velocities and are equipped with numerous devices having different self-oscillation frequencies. The authors present in this paper some theoretical considerations and results of special experiments explaining the origination and possible magnitude of mechanical energy losses caused by vibrations of the experimental turbine. Without going into details with explaining types of experimental turbines, the authors investigate a very simple system which is common to all machines. It consists of a rotor with the working wheels at one end and the braking device at the other one, a casing with the bearings and a dashpot, as shown in figure 1. The authors then investigate the useful turbine energy dissipation during oscillations. Inadequate balancing

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and centering of the rotor, beating of the hydraulic brake disc and other defects in the experimental unit may cause considerable forced oscillations of machine elements and foundations. The authors present formulae and equations for calculating the work spent for these oscillations. They point out that the accuracy of balancing is of great importance. At BITM an experimental unit was built for determining the power measurement errors caused by vibration. An electric motor is used for turning the experimental turbine rotor, as shown in figure 3. The electric motor stator was placed in ball bearings. The moment developed at the shaft of the motor was measured. The friction in each of the turbine bearings was measured by means of floating bushings. The vibrations were caused by artificially unbalancing of the rotor by adding small weights. The results of this test are shown in figure 4. The mechanical losses in the bearings of experimental turbines were determined at BTM by floating bushings, into which the races of the ball

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bearings of the turbine shaft were installed, ²as shown in figure 6. At an oil pressure of 3-4 kg/cm², these bushings begin to float and the friction moment in the bearings is measured by means of balances [Ref 17]. It was established that under certain vibration conditions a negative friction moment is observed and the measurements of friction losses in the bearings become unreliable. Investigations showed the friction moment in the bearings may be measured with adequate accuracy, provided the floating bushings do not touch the walls of the casing. Strong vibrations may cause a seizing of the bushings in the casing and will cause errors of friction moment measurements. The authors arrive at the following conclusion: 1) Vibration of experimental turbines are connected with an additional resistance moment, originating at the shaft, which is not measured by the brake. The magnitude of the error caused by the additional friction moment may attain considerable values, especially in stages with short blades and with partial admission of the

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working medium. The error may be essential with a great temperature drop at the turbine, regardless to a considerable power of the experimental turbine.

2) The magnitude of the experimental error will be especially large with small dimensions of the model. Extraordinary careful balancing is required for small models. 3) Some divergences of the experimental results with analogous stages on different experimental turbines may be explained by an underestimation of the energy dissipation caused by vibration. There are 2 diagrams, 1 photograph, 3 graphs and 3 Soviet references.

ASSOCIATION: Bryanskiy institut transportnogo mashinostroyeniya
(Bryansk Institute of Transport Machine Building)
(Kafedra turbostroyeniya (Chair of Turbine Building))

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AUTHORS: Kirillov, I.I., Doctor of Technical Sciences, Professor
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TITLE: Turbine Stages Which Develop a Large Starting Torque

PERIODICAL: Energomashinostroyeniye, 1960, No.9, pp.6-8

TEXT: In gas turbine plants for traction applications, a turbine with a large starting torque can simplify the transmission of the main drive and thereby significantly improve the efficiency and reduce the cost of the entire installation. Some analytical derivctions and tests carried out at the Bryansk Institute of Transport Machinery (Bryanskiy institut transportnogo mashinostroyeniya) are reported which illustrate the possibilities of greatly increasing the starting torque in stages especially designed to this end and thus deviating from other optima under operating design conditions. The factor by which the starting torque exceeds the operating torque under design conditions can be calculated in the first approximation assuming an unchanged gas mass flow and becomes a function of the circulation coefficient only. Tests have shown that the measured starting torque is higher than the values so calculated and it is necessary to study the flow through

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