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129-58-8-8/16

AUTHORS: Novikov, V. N., Tutov, ~~I. Ye.~~, Candidates of Technical Science and Kondrashev, A. I., Engineer

TITLE: Local Heat Treatment of Weld Joints Manufactured by Electric Slag Welding (Mestnaya termicheskaya obrabotka svarnykh soyedineniy, vypolnennykh elektroshlakovoy svarkoy)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 8, pp 38-43 (USSR)

ABSTRACT: The single-pass electric slag welding of 100-400 mm thick components developed by the imeni Ye. O. Paton Welding Institute (Institut svarki imeni Ye. O. Patona) is widely used in Soviet industry. However, the heat treatment of large components (normalisation annealing and high temperature tempering), which has to be carried out if they are to be highly stressed in service, involves serious technological difficulties. TsNIITMASh and NKMZ investigated the problems involved in the process of electro-heat treatment of welded joints of very large (100 ton) sheets of the Steel 22K. The sheets were butt welded with a wire electrode using a slag method. 50 c.p.s. current was used which ensures a relatively

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Local Heat Treatment of Weld Joints Manufactured by Electric Slag Welding

low speed and a high degree of uniformity of heating the plate along the cross section. The width of the zone which became heated to a temperature above the Ac_3 point was 2.5 times as high as the width of the weld; beyond this zone the heating was effected as a result of the thermal conductivity of the material. The induction equipment ensured local heating of the weld by means of a group of flat single-phase multi-turn 50 c.p.s. inductors which were connected into a three-phase system; the heating was effected simultaneously from both sides along the entire length of the weld. The inductors are fitted into two revolving frames and are pressed onto the plate by means of pneumatic or hydraulic devices. The induction equipment had a rating of 700 kVA. In Fig.1 the changes are graphed of the mechanical properties of the Steel 22K as a function of the heating temperature on the basis of experiments made by heating in the furnace at temperatures of 650 to 1050°C with a holding time of four hours at each temperature. The temperature range 700-800°C proved to be the most dangerous one; the

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yield point of the steel is reduced by such a heating and subsequent tempering at 600°C to 4-6 kg/mm². The best combination of mechanical properties is obtained in the case of normalisation annealing at 870 to 950°C. Since this steel is not prone to over-heating, induction heating in the weld up to 1050°C is considered admissible. Relaxation tests of the normalised steel showed that tempering at 650°C during 1 to 2 hours conserves the required mechanical properties of the normalised steel whilst eliminating almost entirely the residual stresses. The applied control equipment enabled achieving a full equalisation of the temperature throughout the entire thickness of the plate along the weld seam. The described investigations of the seam metal and the thermally affected zone allows the following conclusions to be made:

1) Normalisation annealing restores the over-heated coarse crystalline structure of the weld obtained during electric slag welding which leads to an improvement of the ductility of the steel. Irrespective of the method

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Local Heat Treatment of Weld Joints Manufactured by Electric Slag Welding

of heating after normalisation and tempering, the metal of the weld and of the near-weld zone will have a strength and mechanical characteristics equal to that of the base metal.

2) The most rational type of heating for normalisation annealing of the metal in the case of welds of large size plates is local induction heating by 50 c.p.s. current.

3) Local electro-thermal treatment of welded plates of the Steel 22K containing at least 0.22% carbon ensures obtaining mechanical properties which are in accordance with the requirements to be met by this sheet material.

The described new technology of heat treatment has been successfully introduced and is recommended for weld joints of tubes and steam pipings, high pressure vessels and various other components. If it is necessary to eliminate more fully the residual stresses in the welded component by high temperature tempering in the case of heating in furnaces, application of local electro-thermal treatment (normalisation) is rational and efficient for welds produced by electric slag welding since it excludes

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Local Heat Treatment of Weld Joints Manufactured by Electric Slag Welding

warping and the necessity of straightening of the welded components as is necessary during heating to high temperatures inside furnaces.
There are 5 figures, 1 table.

ASSOCIATIONS: TsNIITMASh and NKMZ

1. Welded joints--Heat treatment 2. Welded joints--Properties
3. Welded joints--Test results

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Card 2/3 erosion resistance

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ACC NR: AP6035884 SOURCE CODE: UR/0413/66/000/020/0124/0124

INVENTOR: Badayeva, A. A.; Pervaya, A. S.; Tutov, I. Ye.; Katsnel'son, V. Yu.; Kuz'mintsev, V. N.; Koloskov, M. M.; Kulinich, V. P.

ORG: none

TITLE: High speed steel. Class 40, No. 187314 [announced by the Central Scientific Research Institute of Technology and Machine Building (Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya); All-Union Scientific Research Tool Institute (Vsesoyuznyy nauchno-issledovatel'skiy instumental'nyy institut)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 20, 1966, 124

TOPIC TAGS: high speed steel, chromium tungsten molybdenum steel, vanadium containing steel, titanium containing steel, DUCTILITY, TOUGHNESS

ABSTRACT: This Author Certificate introduces a high-speed steel containing silicon, manganese, chromium, tungsten, molybdenum, vanacium and titanium. To improve the strength, ductility, notch toughness, and oxidation and heat resistance and to reduce carbide heterogeneity, the steel composition is set as follows: 0.75—0.85% carbon, 0.17—0.35% silicon, 0.20—0.40% manganese, 3.5—4.5% chromium, 2.5—3.0% tungsten, 2.5—3.0% molybdenum, 1.9—2.2% vanadium, 0.03—0.08% titanium.

SUB CODE: 11/ SUBM DATE: 05Jun65/ UDC: 669.14.018.252.3

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L 2774-66 EWT(m)/EWA(d)/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(h)/EWA(c)/ JD/HW

ACCESSION NR: AP5022012 UR/0286/65/000/014/0080/0080
669.14.08.258

AUTHOR: Markin, S. V.; Tutov, I. Ye.; Prosvirin, K. V.; Shevelev, A. Ye.; Belkov, G. M.; Zemnukhov, I. F.

TITLE: A steel for pressing. Class 40, No. 173007

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 80

TOPIC TAGS: alloy steel, tungsten steel, chromium steel

ABSTRACT: This Author's Certificate introduces a steel for pressing which contains carbon, silicon, manganese, chromium, molybdenum, vanadium, tungsten and aluminum. The mechanical properties of the steel are improved by using the following composition (in %): 0.37-0.45 carbon; 0.4-0.6 silicon; 0.5-0.7 manganese, 2.5-3.0 chromium; 0.9-1.2 molybdenum; 0.6-0.8 vanadium; 1.0-1.4 tungsten; 0.4-0.6 aluminum.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (Central Scientific Research Institute of Technology and Machine Building)

SUBMITTED: 07Feb64 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 000

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8 tables.

SUB CODE: MM ENCL: 00

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VISHENKOV, S.A., kand. tekhn. nauk; KASPAROVA, Ye.V., inzh.; Prinimali uchastiye: RYABCHENKOV, A.V., doktor khim. nauk, prof.; VELEMITSINA, V.I., inzh.; ZUSMANOVICH, G.G., kand. tekhn. nauk; TUTOV, I.Ye., kand. tekhn. nauk, retsenzent; KUBAREV, V.I., inzh., red.; TAIROVA, A.L., red. izd-va; MAKAROVA, L.A., tekhn. red.; MEL'NICHENKO, F.P., tekhn. red.

[Increasing the reliability and durability of machine parts by chemically nickel coating] Povyshenie nadezhnosti i dolgovechnosti detalei mashin khimicheskim nikelirovaniem. Moskva, Mashgiz, 1963. 205 p. (MIRA 16:6)
(Protective coatings) (Nickel)

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NOVIKOV, V.N., kand.tekhn.nauk; TUTOV, I.Ye., kand.tekhn.nauk; KONDRASHEV, A.I., inzh.

Local heat treatment of joints made by automatic welding under flux. Metalloved. i obr. met. no.8:38-43 Ag '58. (MIRA 11:9)

1. TSentralnyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya i Novo-Kramatorskiy zavod tyazhelogo mashinostroyeniya.
(Electric welding) (Metals--Heat treatment)

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TUTOV, I. YE.

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Metallovedeniye; posobiye dlya kvalifitsirovannykh rabochikh (Metal working; a textbook for qualified workers) Izd. 2. Moskva, Mashgiz, 1954.

319 p. illus., diagrs., tables.

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TUTOV, I. Ye.

PHASE X TREASURE ISLAND BIBLIOGRAPHICAL REPORT AID 724 - X

Call No.: AF645595

BOOK
Author: TUTOV, I. Ye., Kand. of Techn. Sci.
Full Title: PHYSICAL METALLURGY. 2nd ed, rev. and suppl.
Transliterated Title: Metallovedeniye. Izd. 2-e, perer. i dopol.

PUBLISHING DATA
Originating Agency: None
Publishing House: State Scientific and Technical Publishing House of Machine-Building Literature (MAShGIZ)
Date: 1954 No. pp.: 320 No. of copies: 30,000
Editorial Staff:
Editor: Levando, V. V. Editor-in-Chief: Beyzel'man, R. D. Eng.

PURPOSE AND EVALUATION: This is a textbook on physical and to some extent on mechanical metallurgy intended for qualified foremen and for members of the technical staff of heat treating and metal working shops of machine-building plants. It is a well-written book, giving quite an extensive outline of the fundamentals of metallography and of their applications to problems of metal working and casting. Many of the alloys produced in Russia are mentioned, and their markings and some data on their characteristics are

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given. The book does not cover many topics, among them: production and refining of metals; furnaces, refractories and fuels; the new dislocation theory of the crystal structure of metals and alloys; impact strength and testing; fatigue and fatigue resistance; corrosion and corrosion resistance; and power and welding metallurgy. Otherwise in the extent of material covered this textbook can be compared with standard American college textbooks on physical metallurgy, such as: Clark, D. S. and Varney, W. R. Physical Metallurgy for Engineers, 1952, Stoughton, B., Butts, A. and Bounds, A. M. Engineering Metallurgy, 1953.

TEXT DATA

Coverage: This book outlines principles of the crystal structure of steel, cast iron, aluminum and other alloys, with their mechanical and technological properties and characteristics. It describes those principles of metallography which are basic for the practical heat treatment shop work of engineering alloys. Outlined are the typical defects encountered in the production and finishing of machine part castings, their causes, and methods of their elimination and correction. In this second edition the following chapters have been revised: Ch I, crystal structure of metals and alloys; Ch III, the critical points of steel and cast-iron; and

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Metallovedeniye. Izd. 2-e, perer. i dopol. AID 724 - X

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No. of References: None

Facilities: Many Russian metallurgists are mentioned in the text.

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TUTOV, I.Ye.

Weldable structural steel. Biul. TSIICHM no.10:45-46 '60. (MIRA 15:4)

(Steel, Structural--Welding)

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BOOK Call No.: AF645595

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Transliterated Title: Metallovedeniye. Izd. 2-e, perer. i dopol.

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Publishing House: State Scientific and Technical Publishing House of Machine-Building Literature (MAShGIZ)
Date: 1954 No. pp.: 320 No. of copies: 30,000
Editorial Staff:
Editor: Levando, V. V. Editor-in-Chief: Beyzel'man, R. D. Eng.

PURPOSE AND EVALUATION: This is a textbook on physical and to some extent on mechanical metallurgy intended for qualified foremen and for members of the technical staff of heat treating and metal working shops of machine-building plants. It is a well-written book, giving quite an extensive outline of the fundamentals of metallography and of their applications to problems of metal working and casting. Many of the alloys produced in Russia are mentioned, and their markings and some data on their characteristics are

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Metallovedeniye. Izd. 2-e, perer. i dopol. AID 724 - X

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No. of References: None

Facilities: Many Russian metallurgists are mentioned in the text.

7/7

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOV, I. YE
N. N. MURACH, Leteinoe Delo, 1940, 11, (2), 8-10

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

L 29381-66 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AP6019796 SOURCE CODE: UR/0286/65/000/004/0113/0113

INVENTOR: Prokhorov, A. V.; Shalamov, I. I.; Fetisov, S. G.; Prokhorov, P. A.; Tutov, I. Ye.; Parshin, A. A.; Kavesh, L. D.; Slutskaya, T. M.; Yunger, S. V.

49
B

ORG: none

TITLE: Low-alloy steel. Class 18, No 148088

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 4, 1965, 113

TOPIC TAGS: low alloy steel, vanadium, boron, tensile strength, heat resistance

ABSTRACT: A low-alloy steel is proposed which has vanadium and boron added to it to increase strength and heat resistance. Its chemical composition is: 0.13-0.18% C, 1.2-1.6% Mn, 0.5-0.8% Si, 0.3-0.6% Cr, 0.15-0.25% Mo, 0.08-0.12% V and 0.003% (max) B. [JPRS]

SUB CODE: 11, 20 / SUBM DATE: none

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

SOFRONOV, F.P.; TITARENKO, P.Ya.; TUTOV, M.P.; LISIN, G.Ya.; SONIN, B.A.

"Deep open-pit mines" by M.G.Novozhilov, V.G.Selianin. Gor. zhur no.4: 77-78 Ap '63. (MIRA 16:4)
(Strip mining) (Novozhilov, M.G.) (Selianin, V.G.)

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TUTOV, P. inzh.

Obligations have been carried out. Na stroi.Mosk. 1 no.10:10 O '58. (MIRA 11:12)

(Moscow--Building)

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOV, P.

32465. Vzaimnyy knotrol' na stroitel'stve. Arkhitektura i stroit-vo, 1949, No. 9, s. 16-18.

SO: Letopis' Zhurnal'nykh Statey, Vol. 50, Moskva, 1949

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOV, P., inzh.

Czechoslovak finishers on Moscow construction sites. Na stroi. Mosk. 1 no.2:13-16 F '58. (MIRA 11:9)
(Plastering) (Painting, Industrial)

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

AZBEL, B., inzh.; TUTOV, P., inzh.

General construction brigades should work in three shifts. Na stroi. Mosk. 1 no.4:24-26 Ap '58. (MIRA 11:9)
(Moscow--Building)

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2"

"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

2

***Effect of Small Additions of Sulphur on the Formation in Aluminium Alloys of Phases Unstable to the Action of Water and Atmospheric Moisture.** T. E. Tutov (*Metallurg* (*Metallurgist*), 1938, (7/8), 81-90).—[In Russian.] In aluminium alloys, sulphides are absorbed in small amounts (equivalent to 0·04–0·002% sulphur) by the intermetallic compounds. The greater portion of the sulphides formed pass from the metal into the slag. The intermetallic compounds Mg_2Si, $NiAl_3$, and Mg_2Al_3 have the capacity of absorbing sulphides which render them unstable to the action of water and atmospheric moisture. The compound $CuAl_2$ and the *T*-constituent, in the absence of magnesium, do not take up sulphides.—N. A.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOV, I.Ye., kandidat tekhnicheskikh nauk; LEVANDO, V.V., redaktor; POPOVA, S.M., tekhnicheskiy redaktor.

[Science of metals; textbook for trained workers] Metallovedeni; posobie dlia kvalifitsirovannykh rabochikh. Izd. 2-e, perer. i dop. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1954. 319 p. [Microfilm] (MLRA 7:11)
(Metallography) (Alloys)

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

S

10

Single-Quench Treatment of Case-Hardened Parts. *I. E. Tutov* and *D. Y. Bragin.* (Metallurgist, Russia, 1937, vol. 12, No. 5, May, pp. 34–43). (In Russian). The authors have investigated the microstructures and mechanical properties of four case-hardening steels: *U2* (carbon 0·18%, manganese 0·53%, silicon 0·22%); *T₁K* (carbon 0·16%, chromium 0·55%, nickel 2·08%, manganese 0·55%); *KhIN* (carbon 0·14%, chromium 0·71%, nickel 3·27%, manganese 0·71%); *KhM1* (carbon 0·13%, chromium 0·94%, nickel 3·94%, manganese 0·47%); *53a-1* (carbon 0·18%, chromium 1·47%, nickel 4·28%, tungsten 0·97%). Specimens of each were carburised and then subjected to one of the following heat treatments: Quenched from 860° C., annealed at 580° C. and requenched from 760°C.; quenched from 760° and annealed at 170° C.; heated to 860° C., quenched from 760° C. and annealed at 170° C.; quenched from 810° C. and annealed at 170° C. Since excessive grain growth does not occur during the carburising of low-alloy special steels the authors conclude that a single-quench treatment is sufficient; carried out from 760–780° C. it removes all traces of cementite network from the surface of the case on all the steels examined with cases up to 1·1 mm. in thickness; for heavier cases a single quench from 810–820° C. is suggested. For the higher-nickel steels (*KhM1* and *53a-1*) which readily distort in quenching, the quenching temperature can be reduced to 730–740° C. Omitting the preliminary quench from 860° C. does not affect the structure of the case or core; on the contrary it diminishes the dangers of distortion and decarburisation and of attack by furnace gases.

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9

Prevention of warping in helical pinions during heat treatment. I. E. Tittov. *Metallurg* 10, No. 8, 61-7 (1935). Normalization from 850° followed by an oil quench from a salt bath at 730° was substituted for the double oil quench from 850° and 770° previously used.

H. W. Rathmann

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Cu

7

The influence of phosphorus on the stability of intermetallic compounds in aluminum alloys exposed to atmospheric moisture. I. E. Tutov. *Metallurg* 12, No. 6, 84-97(1937); cf. C. A. 32, 2480[9].—An alloy corresponding in compn. to Cu_2NiAl_6 which contained 0.045% P when cast disintegrated completely in 24 hrs., the P content dropping to 0.030%. With 0.045% P, disintegration was complete in 4 days, the P content dropping to 0.010%. An alloy corresponding to $CuAl_2$ acted similarly. Al alloys high in $NiAl_3$, Mg_2Si and $FeAl_3$ or with P added did not disintegrate but the surface became discolored and the P content dropped. Alloys without P did not disintegrate. Owing to segregation 0.02% P is sufficient to cause complete disintegration of the intermetallic compds. in an alloy contg. Cu 4, Ni 1.5, Mg 1.5, Si 0.3 and Fe 0.25%. Disintegration is caused by the presence of AlP which is decompd. by moisture. H. W. R.

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Ca

4

Single heat treatment of carburized parts. I. E. Tutov and D. Ya. Bragin. *Metallurg* 12, No. 5, 34-43 (1937).—Investigation of 1 C and 4 alloy steels shows that elimination of the 1st quench of the usual double quench reduces warping and does not lower the mech. properties of the core. H. W. Rathmann

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3rd AND 4TH ORDERS

The effect of nitrogen on aluminum alloy castings. I. E. Tutov. *Metallurg* 13, No. 1, 100-4 (1938). K, Na, Ca and Mg in Al alloys form nitrides on melting in contact with air. These nitrides enter the slag and leave only traces in the metal. Nitrides cannot cause disintegration of the alloy, as they are never found in the intermetallic compds. Passing N_2 through molten Al or Al alloy increases corrosion resistance by removing K, Na, Ca and finally Mg. H. W. Rathmann

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1ST AND 3RD LETTER

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

The effect of small additions of sulfur on the formation of unstable phases in aluminum alloys. I. E. Tutov. *Metallurg* 13, No. 7-8, 81-90(1938).—Intermetallic compds., primarily Mg_2Si, $NiAl_3$ and Mg_2Al_3, absorb small amts. of sulfides. These compds. are disintegrated by moisture, 0.002-0.004% S in the alloy being sufficient for complete disintegration. H. W. Rathmann

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1ST AND 2ND ORDERS

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3RD AND 4TH ORDERS

Ca

9

Dark areas in aluminum alloy castings. L. E. Tutov. *Metallurg* 12, No. 2, 93 100(1937).—Dark spots which sometimes appear in the upper portion of Al alloy castings after machining are due to the segregation of P in the upper part of the casting. In the presence of moisture 0.02% P promotes the disintegration of the Cu-Al compds with the formation of PH_3. H. W. R.

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Co

Phosphorus in aluminum castings. I. E. Tutov. Metallurg 13, No. 3, 92-7(1938).—P segregates in the upper portion of castings and in the gates and risers. Segregation is more pronounced in Cu-Al alloys than in Cu-Ni-Al alloys. P in excess of 0.010-0.015% can be removed by refining the molten alloy with a KCl-NaCl-NaF slag. An increase in the intermetallic compds. increases absorption of P by the alloy. ... H. W. Rathmann

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M

Effect of Phosphorus on the Corrosion-Resistance of Intermetallic Aluminium Compounds in Moist Air. I. E. Tulov (*Metallurg* (*Metallurgist*), 1957, (6), 84-97).—[In Russian.] Alloys were prepared with compositions corresponding to the compounds: Cu_2NiAl_4, $CuAl_2$, $NiAl_3$, Mg_2Si, and $FeAl_3$, with different concentrations of phosphorus (up to 0·80%). The presence of phosphorus is revealed by the occurrence in microstructures of small columnar or formless inclusions of AlP. In moist air, the reaction $AlP + 3H_2O = Al(OH)_3 + PH_3$ takes place, and causes a deterioration of the alloys. A study of different aluminium alloys (with different amounts of nickel and copper), including "Y" alloy, and of pure aluminium, with addition of phosphorus, showed the segregation of phosphorus and its occurrence mainly in the intermetallic compounds. The phosphorus content of aluminium used for the preparation of alloys must not exceed 0·012%.—N. A.

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21

The Repair of Defects in Aluminium Alloy Castings by Welding. I. F. Tutov (*Aviopromish.* (*Air Ind.*), 1938, (7), 3-9).—[In Russian.] The aluminium alloy with 9% copper was used to show the effects of over-heating in the region around the weld, the result of which the eutectic melts and exudes, leaving holes and porosity which, in turn, reduce the original tensile strength by 30-60%. This undesirable effect can be prevented by the use of chills. The above phenomenon does not take place in the welding of Silumin (silicon 10, magnesium 0·25, manganese 0·5%) and the modified structure is retained.
—N. A.

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19

Investigation of the Effect of Duration of Heat-Treatment on Aluminium Alloys. I. E. Tutov (*Metallurg* (*Metallurgist*), 1936, (6), 83–91).—(In Russian.) The effects of annealing cast alloys was studied on specimens of "Y" alloy cast at (I) 720°, (II) 760°, and (III) 820° C. The specimens, which had a grain-size of 2·5 mm., 5 mm., and 7·5 mm., respectively, were annealed for 0, 25, 50, 70, 100, 140, and 300 minutes at 500° C., quenched in oil, and normalized at 225° C. Determinations of the tensile strength, elongation, and Brinell hardness showed that specimens (I) required no annealing to obtain maximum mechanical properties, whereas (II) required 25 minutes and (III) 50 minutes, the annealing time being, therefore, directly proportional to the grain-size. Similar tests on Duralumin showed that annealing the castings for 1 hr. at 500° C. prior to quenching produces a satisfactory metal for forging. Two series of Duralumin rods forged at 460°–360° C. to 28·5 and 60% reduction, respectively, were quenched at 500° C. after annealing for 0–120 minutes, and their tensile strengths determined; the best mechanical properties were obtained after a 15 minutes' anneal. Ageing tests on "Y" alloys at 150°, 210°, 225°, and 250° C. showed that maximum mechanical properties were obtained in 1 hr. at 250° C., but for practical purposes 2–3 hrs. at 225°–230° C. is recommended. The results obtained were verified in practice in the manufacture of pistons.—N. A.

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Phosphorus in Aluminium Alloys. I. E. Tulov (*Metallurg* (*Metallurgist*), 1958, (3), 93–97).—[In Russian.] Phosphorus in liquid metal is concentrated in the upper parts of the bath; in the casting, therefore, it forms in the upper part a sharply outlined horizontal liquation zone. Phosphorus can enrich the risers without influencing the casting itself, if the form of the casting is simple and the risers are massive. When refined by flux (NaCl 40, KCl 45, NaF 10, cryolite 5%) only phosphorus in excess of 0·010–0·015% goes into the slag. Even after thorough stirring this amount remains. The more phosphorus remains in the alloy the more intermetallic compounds it contains. Liquation of phosphorus is greater in copper-aluminium alloys than in copper-nickel-aluminium alloys. For this reason, in copper-aluminium alloys, phosphorus is more easily removed into the risers.—N. A.

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13

M

Dark Spots on Aluminium Alloy Castings. I. E. Tulov (*Metallurg* (*Metallurgist*), **1937**, (2), 93-100). - [In Russian.] Phosphorus is undesirable in light aluminium alloys, since it has a strong tendency to segregate; its amount should not exceed 0·02-0·025%. Phosphorus forms solid solutions or intermetallic compounds, both at the grain-boundaries and in the grains; the compounds are decomposed by water, with evolution of phosphine. Gas pores and an open structure caused by shrinkage during casting enhance the corrosion and facilitate the formation of dark spots in ingots containing phosphorus, since they permit access of water to the deeper parts of the ingot. Heat-treatment and washing with hot water to remove the nitre from salt-bath annealing operations also accelerate corrosion. Methods are discussed for preventing the formation of dark spots by controlling the phosphorus content at a low level. N. A.

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TUTOV, S.F. (Kramatorsk)

Bending of a plate in the shape of a circular rectangle.
Prikl. mekh. 1 no.4:133-136 '65. (MIRA 18:6)

1. Novo-Kramatorskiy mashinostroitel'nyy zavod.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

AUTHORS: Brodskiy, A. M.; Lavrovskiy, K. P.; Tu.ov, V. B.; Eglit, A. M.

TITLE: On the mechanism of radiation-thermal transformations of n.alkanes in liquid phase

SOURCE: Neftekhimiya, v. 5, no. 3, 1965, 351-362

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trations of iso- and normal radicals inside and outside

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

VEYNIK, A.I., doktor tekhn. nauk ; TUTOV, V.I., inzh.

Pipe casting by the cooling-up method. Mashinostroenie no.1: 67-70 Ja-F '64. (MIRA 17:7)

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

GRINBERG, V.A.; TUTOV, V.I.

Increasing the output of cupolas and the economy of refractory materials. Lit. proizv. no.6:42 Je '62. (MIRA 15:6)
(Cupola furnaces)

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TUTOV, V K

16(1);28(2) PHASE I BOOK EXPLOITATION SOV/2349

Dobrogurskiy, Sergey Osipovich, Vyacheslav Antipovich Kazakov, and Viktor Konstantinovich Tutov

Schetno-reshayushchiye ustroystva (Computers) Moscow, Oborongiz, 1959. 463 p. Errata slip inserted. 20,000 copies printed.

Reviewer: N.I. Pchel'nikov, Doctor of Technical Sciences, Professor; Scientific Ed.: L.N. Presnukhin, Doctor of Technical Sciences, Professor; Ed. of Publishing House: M.F. Bogomolova; Tech. Ed.: V.P. Rozhin; Managing Ed.: A.I. Sokolov, Engineer.

PURPOSE: This book is approved by the Ministry of Higher Education, USSR, as a textbook for students in vtuzes.

COVERAGE: The book is divided into three parts. In the first part, written by Professor S.O. Dobrozurskiy, various mechanical calculator mechanisms such as friction and gear differential mechanisms are discussed in detail. Here the author stresses the structural peculiarities of the various mechanisms and the

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operations they perform. The author also discusses various characteristic components and the problems concerning them which are often encountered in the construction of calculators. Problems of accuracy in operation, the most important requirement any calculator has to meet, are accorded a significant place in the book. In the second part of the book, written by Docent V.A. Kazakov, a study is made of electric and electromechanical devices, i.e., potentiometers, rotary transformers, and various differentiating and integrating devices. The third part, written by V.K. Tütov, covers elements of servosystems, their fundamental static and dynamic characteristics, and the functions that they can perform. Among the types of servosystem elements studied are devices which determine the difference between two values, devices which handle the input signal, and devices which amplify the error signal. Among the error- measuring devices, a study is made of selsyns, while amplifiers are represented by electronic, thyratron, and magnetic amplifiers and amplidynes. Direct and alternating current motors which handle the input signal are considered last. No personalities are mentioned. References are given at the end of each of the three parts of the book.

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APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2"

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TUTOV, V.M.; OTPUSHCHENNIKOV, N.F.

Speed of sound and the inelastic properties of metals. Izv. vys. ucheb. zav.; fiz. 8 no.6:172-174 '65. (MIRA 19:1)

1. Kurskiy pedagogicheskiy institut. Submitted July 21, 1964.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

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S/058/62/000/004/072/160
A058/A101

AUTHORS: Otpushchennikov, N. F., Tutov, V. M.

TITLE: Ultrasonic propagation in supercooled liquids

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 36-37, abstract 4G307 (V sb. "Primeneniye ul'traakust. k issled. veshchestva". v. 13, Moscow, 1961, 79-87)

TEXT: Using the pulse method, the authors investigated sonic velocity in salol and thymol in a wide temperature range, including the region of the supercooled state. The experiment made it possible to observe with ease variations in sonic velocity smaller than 0.5 m/sec. Incident to transition through the melting temperature, both substances evince a jump of sonic velocity. This jump amounted to 4 m/sec in salol, and 5 m/sec in thymol. No change in the temperature coefficient of sonic vibration was observed incident to the said transition. The observed jumps were the same for transition from the supercooled state into the liquid state and from the liquid state into the supercooled state. The authors hold that the abrupt change observed in ultrasonic velocity incident

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Ultrasonic propagation in supercooled liquids

S/058/62/000/004/072/160
A058/A101

to transition through the melting point is an indication that there exists, in the supercooled state, a molecular modification different from that of the liquid state. There are 29 references.

I. Ratinskaya

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

OTPUSHCHENNIKOV, N.F.; TUTOV, V.M.

Propagation of ultrasound in supercooled liquids. Prim. ul'tra-akust. k issl. veshch. no.13:79-87 '61. (MIRA 16:6)

(Ultrasonic waves--Speed)
(Liquids--Acoustic properties)

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2"

"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVA, A.F.; NIKOLAYEVA, L.P.; [illegible], N.V.; [illegible], [illegible]; KHOL'YEVSKIY, A.A.; GALKINA, K.I.; SOKOLOVA, K.A.; KUAYLEVA, T.Ye., otv. red.; [illegible], S.I., red.

[Transactions and materials of scientific congresses and conferences published abroad in 1962; an index] Trudy i materialy nauchnykh kongressov i soveshchanii, opublikovannye za rubezhom v 1962 godu; ukazatel'. Vypusk 3. Leningrad, 1964. 133 p. (MIRA 17:9)

1. Akademiya nauk SSSR. Biblioteka.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

ACC NR: AP7002918 (N) SOURCE CODE: UR/0170/66/011/006/0787/0796

AUTHORS: Sheyman, V. A.; Tutova, E. G.

ORG: Institute of Heat and Mass Transfer, AN BSSR, Minsk (Institut teplo- i massoobmena AN BSSR)

TITLE: Calculation of the heat-transfer process in three-component systems

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 11, no. 6, 1966, 787-796

TOPIC TAGS: heat transfer, heat transfer coefficient, heat transfer fluid, heat loss, boundary value problem, inverse problem, temperature

ABSTRACT: A method for calculating heat transfer in systems with three heat-transfer agents of variable heat-transfer coefficients and surfaces is proposed (see Fig. 1). For this system, the equations for gradientless particle heating are:

$$dt' = -\frac{\alpha_2}{W_1}(t' - t'')\,dF_2 - \frac{\alpha_3}{W_1}(t' - t''')\,dF_3,$$

$$dt'' = \frac{\alpha_2}{W_2}(t' - t'')\,dF_2,$$

$$dt''' = \mp\frac{\alpha_3}{W_3}(t' - t''')\,dF_3.$$

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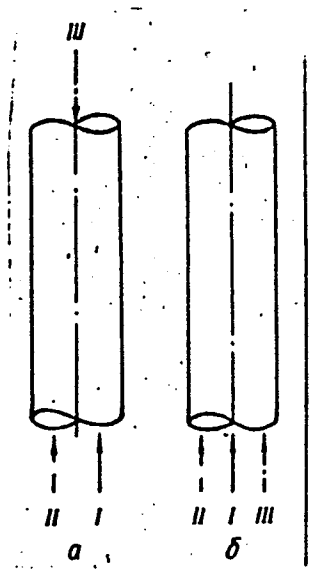

Fig. 1. Motion of heat-transfer agents: I - gas; II - fine dispersed materials; III - large particles

The heat-transfer coefficients vary with the x coordinate as:

$$\alpha_2 = \alpha_{2н} \exp(-c_2 F_2), \quad \alpha_3 = \alpha_{3н} \exp(-c_3 F_2).$$

The heat-transfer surfaces vary with the x coordinate as: $F_3 = bF_2$. The temperatures of heat-transfer agents I, II, and III (gas, fine dispersed materials, and large

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particles) are determined by the equations:

$$\Theta'' = C_1 \sum_{n=0}^{\infty} s_n^{(1)} \frac{X^{n+1}}{n+1} + C_2 \sum_{n=0}^{\infty} s_n^{(2)} \frac{X^{n+1}}{n+1} + C_3,$$

$$\Theta' = \Theta'' + YR_{21} \exp(c_4 X),$$

and

$$\Theta''' = \Theta' + \frac{1}{\beta} \exp(c_6 X) \frac{d\Theta'}{dX} + \frac{1}{\beta} \exp[(c_6 - c_4) X] (\Theta' - \Theta'').$$

Heat transfer between two agents is discussed. The possibility of an inverse problem is also mentioned. Orig. art. has: 54 formulas and 1 diagram.

SUB CODE: 20/ SUBM DATE: 18Jul66/ ORIG REF: 007/ OTH REF: 002

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APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2"

"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

PANKOVA, Ye.V., kand.med.nauk, assistent; TUTOVA, I.M., aspirant

Treatment of late pregnancy toxemias with magnesium sulfate aerosols; preliminary report. Sbor. nauch. rab. Kaf. akush. i gin. GMI no.1: 59-61 '60. (MIRA 15:4)

1. Kafedra akusherstva i ginekologii, zav.kafedroy G.K.Cherepakhin, Gor'kovskogo gosudarstvennogo meditsinskogo instituta.
(AEROSOL THERAPY) (MAGNESIUM SULFATE)
(TOXEMIA) (PREGNANCY, COMPLICATIONS OF)

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2"

"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVA, I.M., aspirant

Clinical evaluation of the use of magnesium sulfate aerosols in late pregnancy toxemias. Sbor. nauch. rab. Kaf. akush. i gin. GMI no.2: 45-48 '60. (MIRA 15:4)

1. Kafedra akusherstva i ginekologii Gor'kovskogo meditsinskogo instituta im. S.M.Kirova (zav.kafedroy prof. G.K.Cherepakhin).
(PREGNANCY, COMPLICATIONS OF) (TOXEMIA)
(MAGNESIUM SULFATE)

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVA, I.M., aspirant

Magnesium content in the blood serum following the administraion of a magnesium sulfate aersol by inhalation and intramuscular methods in treating late pregnancy toxemias. Sbor. nauch. rab. Kaf. akush. i gin. GMI no.2:49-51 '60. (MIRA 15:4)

1. Kafedra akusherstva i ginekologii Gor'kovskogo meditsinskogo instituta (zav.kafedroy prof. G.K.Cherepakhin).
(MAGNESIUM IN THE BODY) (PREGNANCY, COMPLICATIONS OF)
(TOXEMIA)

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVA, L. I.

CA

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Influence of glycerol on the development of Spirochaeta pallida in culture. L. I. Tutova (Stavropol Inst. Epidemiol. Microbiol.). *Vestnik Venerol. i Dermatol.* 1946, No. 5, 34-8.—Strains I, II, IV, and V showed equal stability in glycerol-physiol. NaCl solns. With 40% glycerol all strains remained alive for 14 days, without glycerol 11-12 days. The cultures were kept under petrolatum at 22-5°. Lower concns. down to 15% prevented growth, but some growth occurred at 5-10%. At 2.5% strain I showed growth after 2-3 days, while strains II, IV, and V showed growth after 2-3 days in 0.5-1.0% solns. These concns. are optimum in comparison with controls (physiol. soln.) which showed a much retarded growth in comparison with the low-glycerol cultures. G. M. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVAN, V.

RUMANIA/Magnetism - Ferromagnetism. F

Abs Jour : Ref Zhur Fizika, No 1, 1960, 1232

Author : Tutovan, V.
Inst : -
Title : Variation of Magnetic Permeability and of the Alternating Magnetic Induction in Iron Wires and Rods under the Influence of Tension

Orig Pub : An. stiint. Univ. Iasi, 1958, Sec. 1, 4, No 1, 107-122

Abstract : An investigation was made of the influence of tension, up to the yield point, on the value of the permeability and the magnitude of the alternating induction, occurring in an iron wire when an alternating current flows in it in the absence of a weak constant field (Procopiu effect). -- Ya.N. Kolli

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVAN, V.

RUMANIA/Magnetism - Ferromagnetism. F

Abs Jour : Ref Zhur Fizika, No 1, 1960, 1233

Author : Tutovan, V.
Inst : -
Title : On the Magnetic Permeability in the Case of the Phenomenon of Alternating Magnetic Induction. Effective Tension

Orig Pub : An. stiint. Univ. Iasi, 1958, Sec. 1, 4, No 1, 123-128

Abstract : The effect of alternating magnetic induction consists of the appearance of an alternating magnetic induction B_a of frequency 2ω, parallel to the wire axis, when the latter carries a current of frequency. By magnetic permeability μ_c one understands in this case the ratio of the effective values of the induction B_a to the intensity of the magnetic field Ha,

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

RUMANIA/Atomic and Molecular Physics - Heat. D

Abs Jour : Ref Zhur Fizika, No 4, 1960, 8364

Author : Tutoveanu, A.
Inst : [redacted]
Title : Practical Methods of Eliminating Systematic Errors in the Measurement of Temperature by Means of Thermoelectric Instruments.

Orig Pub : Metrol. apl., 1959, 6, No 2, 74-79, 95, 96

Abstract : No abstract.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, A.

Methods of checking the dimensions of the smooth gauges of shafts and borings. p. 264.

METROLOGIA APLICATA. (Directia Generala de Metrologie de pe linga Consiliul de Ministri) Bucuresti, Rumania. Vol. 5, no. 6, Nov./Dec. 1958

Monthly list of East European Accessions (EEAI) LC Vol 8, No. 6, June 1959
Uncl.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, A.; PRISECARU, M.

Measuring methods for the medium diameters of the inside thread of the ring gauge. Metrologia apl 10 no.3:115-121 Mr '63.

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TUTOVEANU, A.

Practical methods for eliminating the main errors in measuring temperatures with thermoelectric devices. Metrologia apl 6 no.2: 74-79 Ap-Je '59.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, A.; PRISECARU, M.

Checking conical gauges. Metrologia apl 10 no.9:392-398 S '63.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, E.

New technology calls for increased attention. Constr Bic 17 no.787: 2 6 F '65.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

OROS, Marin; SULEA, George, ing.; ZILBERMAN Norbert, ing.; TUTOVEANU, E.

Quality. Constr Buc 17 no.783, 13 F '65.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, E.

Quality, the main problem of export. Constr Bue 17 no.79[illegible]
27 F '65.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, E.

A larger utilization of good bricks. Constr Buc 14 no.651: 2 30 Je '62.

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TUTOVEANU, E.

Why they are appreciated. Constr Buc 16 no. 738:2 29 February 1964.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, E.

Every day wasted, important quantities of lost material.
Constr Buc 16 no. 749:2 16 May '64.

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The trademark, a guranty of good quality. Constr Buc 16 no. 752:2 6 June '64.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

TUTOVEANU, E.

New methods in the Teleajen Works at Berceni. Constr Buc 16 no. 748:1 9 May '64.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

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The orders were delivered in time. Constr Muc 16 no.751:2
30 My '64.

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"APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R001757620010-2

AURELIAN, Z.; TUTOVEANU, E.

Good results from socialist competition. Constr Buc 16 no.760:2 1 Ag '64.

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