

L 04187-67 ENT(m)/ENT(w)/T/ENT(L)/ETI DJJ(c) 30

ACC NR: AT6026547

SOURCE CODE: UR/2776/66/000/046/0037/0040

AUTHOR: Gulyayev, A. P.; Zhadan, T. A.; Mal'tseva, V. S.

54  
56  
B41

ORG: none

TITLE: The effect of titanium on the phase composition of ferritic-austenitic stainless steels

SOURCE: Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii. Sbornik trudov, no. 46, 1966. Spetsial'nyye stali i splavy (Special steels and alloys), 37-40

TOPIC TAGS: stainless steel, titanium, ferrite, austenite, carbide phase, phase composition, impact strength, hardness, saturation magnetization, quenching, tempering, temperature dependence / OKh18G8N2T stainless steel, OKh18G8N2 steel

ABSTRACT: The effect of 0.4% Ti on the phase composition and mechanical properties of OKh18G8N2T stainless steel was studied. Steel samples were quenched from 1200°C and aged to temperatures up to 900°C. Impact strength, hardness and saturation magnetization were given as functions of tempering temperature. The addition of titanium did not change these properties. In the 600-700°C range a sharp drop in impact strength, an increase in hardness and a lowering of saturation magnetization occurred. Electrolytic etching and x-ray analysis showed that TiC formed in the titanium containing

16

Card 1/2

L 04187-67

ACC NR: AT6026547

2  
steel. In the steel without titanium,  $Me_{23}C_6$  and  $\sigma$ -phase formed after prolonged tempering. The TiC,  $Me_{23}C_6$  and  $\sigma$ -phase compositions of the two steels were compared after different heat treatments. The presence of titanium caused a sharp decrease in  $Me_{23}C_6$ , but increased the amount of  $\sigma$ -phase in some cases. Titanium tied up the carbon necessary to form  $Me_{23}C_6$  and left a greater amount of chromium in solid solution, as required for  $\sigma$ -phase formation. Changes in the quantities of TiC and  $Me_{23}C_6$  were given as functions of time. The precipitation of TiC proceeded faster than that of  $Me_{23}C_6$ . For OKh18G8N2 steel with titanium the rate of carbide precipitation became constant after about 10<sup>14</sup> hrs, whereas the amount of  $Me_{23}C_6$  continuously increased in the steel without titanium. Orig. art. has: 2 figures, 2 tables.

SUB CODE: 11/      SUBM DATE: none/      ORIG REF: 002

Card 2/2 LC

KOPOSOV, Ye.S., kand. med. nauk; GULYAYEV, A.S.

Exclusion of the damaged section of cellophane during hemo-  
dialysis in the "artificial kidney" apparatus produced by  
the Scientific Research Institute of Experimental Surgical  
Apparatus and Instruments. Urologia 28 no.3:61-62 '63  
(MIRA 17:2)

L. Iz laboratorii "iskusstvennoy pochki" (nauchnyy rukovoditel'  
prof. N.N. Savitskiy) Voenno-meditsinskoy ordena Lenina akademii  
imeni Kirova.

GORYAINOVA, Avgusta Vasil'yevna; GULYAYEV, A.S., inzh., retsenzent [deceased];  
ALAVEROV, Ya.G., inzh., red.; SOKOLOVA, T.F., tekhn.red.; GORDEYEVA,  
L.P., tekhn.red.

[Glass-reinforced plastic in machinery manufacturing] Stekloplastiki  
v mashinostroenii. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.  
lit-ry, 1961. 214 p. (MIRA 14:6)  
(Machinery--Construction)  
(Glass-reinforced plastics)

GULYAYEV, A.S.; SHPAGIN, A.I.

Method of determining the strength of bonding in bimetal  
strips. Trudy Giprotsvetmetobrabotka no.24:298-306 '65.  
(MIRA 18:11)

GULYAYEV, A.S.

Rolling of the ASM alloy - Armco iron bimetal. TSvet. met.  
38 no.8:69-72 Ag '65. (MIRA 18:9)

GULYAYEV, A.F.; RAKOV, K.M.

Calculating metal pressure on the rolls during the rolling  
of bimetals. Izv.vys.ucheb.zav.; tsvet.met. 8 no.2:140-146  
'65. (MIRA 19:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhелеzнодорожного  
transporta.

I. 24429-66 ENT(m)/ENP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k) IJP(c) JD/HA  
ACC NR: AT6006483 SOURCE CODE: UR/2680/65/000/024/0298/0306

AUTHORS: Gulyayev, A. S.; Shpagin, A. I.

ORG: State Scientific Research and Design Institute of Alloys and Nonferrous Metalworking, Moscow (Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut splavov i obrabotki tsvetnykh metallov)

TITLE: Method for determination of the strength of bonding of bimetallic components

SOURCE: Moscow. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut splavov i obrabotki tsvetnykh metallov. Trudy, no. 24, 1965. Metallovedeniye i obrabotka tsvetnykh metallov i splavov (Metal science and the treatment of non-ferrous metals and alloys), 298-306

TOPIC TAGS: shear strength, rupture strength, alloy, metallurgic testing machine, iron, bimetal/ ASM alloy, BrS30 alloy, TsAM alloy, A-20 alloy, R-5, testing machine, Armeoiron

ABSTRACT: It was the object of this investigation to compare different methods for the quantitative determination of coherence strength of bimetallic components. The strength of the following bimetallic joints was tested: alloy ASM - Armo iron,

Card 1/4



L 24429-66

ACC NR: AT6006483

lead-bronze <sup>18</sup>BrS30 - low carbon steel, alloys of type <sup>18</sup>TaAM - Armco iron (with aluminum sublayer), aluminum-lead alloy <sup>18</sup>A20 - Armco iron (with aluminum sublayer). The strength of the specimens was tested by three different methods, viz: shear, slip, and breaking strength. The shear strength was determined according to the scheme shown in Fig. 1

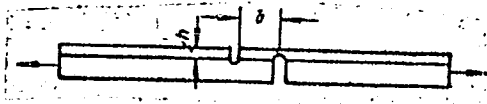


Fig. 1. Specimen for testing of joint strength of bimetallic components (test for shear during tension).  $b$  - distance between slots;  $h$  - thickness of iron.

and was calculated according to the expression

$$\tau_{f \text{ shear}} = \frac{P_{\max}}{F} \text{ Mn/m}^2 (\text{kg/mm}^2)$$

$$F = ab,$$

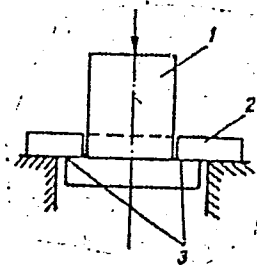
where  $\tau_{f \text{ shear}}$  is the shear strength,  $P_{\max}$  the maximum applied force,  $a$  - the width of the specimen, and  $b$  - the distance between the markings. The slip strength was determined on a suitably modified R-5 machine. A schematic of the installation

Card 2/4

L 24429-66  
ACC NR: AT6006483

is presented. The breaking strength was determined according to the scheme shown in Fig. 2.

Fig. 2. Schematic for the breaking strength test. 1 - plunger, 2 - specimen; 3 - ring, along which the break occurs.

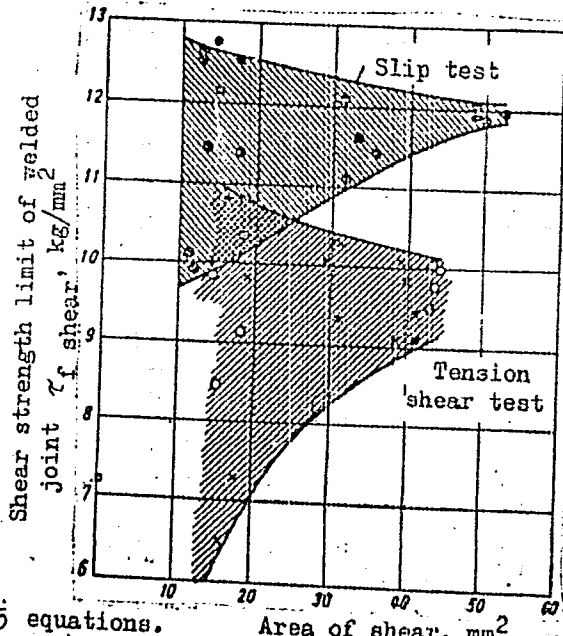


The experimental results are presented graphically (see Fig. 3). It is concluded that the measurement of slip strength affords the most sensitive test for determining the strength of bimetallic joints.

Card 3/4

L 24429-66  
ACC NR: AT6006483

Fig. 3. Results from tests of bimetallic joint strength of iron - TsAM48-2. Open circles - b/h const (different specimens width); crosses - specimens of constant width.



Orig. art. has: 1 table, 7 graphs and 5 equations. Area of shear, mm<sup>2</sup>  
Card 4/4 d/dg SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 005/ OTH REF: 002

GULYAYER, A. V. Physician Dr. Med. Sci.

Dissertation: "Acute Loss of Blood; Changes in Blood Circulation in Acute Post-hemorrhagic Conditions; Experimental and Clinical Investigation." Second Moscow State Medical Inst. imeni I. V. Stalin. 9 Jun 47.

SO: Vechernyaya Moskva, Jun, 1947 (Project #17836)

SLOBODSKOY, A.L. Prof. (Khar'kov)

Review of Perelivaniye krovi [Blood Transfusion] edited by A. A. Bagdasarov and A. V. Gulyayev, Medgiz, 1951. 583 pages. 109 drawings.  
In Khirurgiya, No. 10, Oct. 1952, pp. 82-85. (CJML 23:3)

4-01 YAYEV, A.V.  
TIKHONOVA, Z.I.; STEPANOVA, M.N., kandidat meditsinskikh nauk; MESHALKIN, Ye.N.,  
kandidat meditsinskikh nauk; BAKULEV, A.N., professor; GULYAYEV, A.V., pro-  
fessor; VOZNESENSKIY, V.P., professor; DMITRIYEV, I.P., professor; OGNEV,  
B.V., professor; VAZA, D.L., professor; PETROY, B.A., professor, predsedatel';  
DOROFYEV, V.I., sekretar'.

Minutes of the session of the Surgical Society of Moscow and Moscow Province  
of June 27, 1952. Khirurgiya no.3:84-88 Mr '53. (MIRA 6:6)

1. Khirurgicheskoye obshchestvo Moskvy i Moskovskoy Oblasti.  
(Heart--Surgery) (Cardiovascular system--Surgery)

GULYAYEV, A.V.

PETROV, B.A., professor, predsedatel'; DUBZYKOVSKAYA, E.G.' sekretar'; BGAN-TSEV, N.I., kandidat meditsinskikh nauk; TERNOVSKIY, S.D., professor; MELIK-ARUTYUNOV, A.I. kandidat meditsinskikh nauk; PATSIORA, M.D., kandidat meditsinskikh nauk; YELANSKIY, N.N., professor; DAM'YE, H.G.; TAVONIUS, K.N.; GULYAYEV, A.V., professor; KAZANSKIY, V.I., professor; GROZDOV, D.Ye., professor; DOROFEYEV, V.I.; LINDEMAN, V.I.; MAKHOV, N.I., dotsent.

Minutes of the session of the Surgical Society of Moscow and Moscow Province of September 12, 1952. Khirurgiia no.3:88-92 Mr '53. (MLRA 6:6)

1. Khirurgicheskoye obshchestvo Moskvyy i Moskovskoy oblasti.  
(Spleen--Surgery)

BAKULEV, A.N., redaktor; GAYEVSKAYA, M.S., redaktor; GORIZONTOV, P.D., redaktor; GULYAYEV, A.V., redaktor; DOBRODEYEV, A.V., redaktor; MIL'CHENKO, I.T., redaktor; NEGOVSKIY, V.A., redaktor; NYROVA, P.F., redaktor; PETROV, B.A., redaktor; SARKISOV, S.A., redaktor; SEVERIN, S.Ye., redaktor; SHIKUNOVA, L.G., redaktor; NEYMAN, I.M., redaktor; BOBROVA, Ye.N., tekhnicheskii redaktor

[Transactions of the conference dedicated to problems of pathological physiology and therapy of the terminal states in the clinic and in first aid practice; December 10-12, 1952] Trudy Konferentsii posvashchennoi probleme patofiziologii i terapii terminal'nykh sostoianii v klinike i praktike neotlozhnoi pomoshchi, 10-12 Dekabria 1952 g. Moskva, Gos. izd-vo meditsinskoj lit-ry, 1954. 329 p. (MLRA 8:3)

1. Konferentsiya posvashchennaya probleme patofiziologii i terapii terminal'nykh sostoianii v klinike i praktike neotlozhnoi pomoshchi, Moscow, 1952.

(Physiology, Pathological) (Death, Apparent)



BAKULEV, A.N.; GULIAYEV, A.V., professor.

Sergei Ivanovich Spasokukotskii, physician, scientist, and pedagogue;  
10th anniversary of his death. Khirurgia no.1:3-10 Ja '54. (MIRA 7:5)

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR.  
(Spasokukotskii, Sergei Ivanovich, 1870-1943)

GULYAYEV, A.V., professor

Surgical treatment of mitral stenosis (indications and surgical techniques.) Khirurgiia no.8:3-11 Ag. '55. (MIRA 9:2)

1. Iz gospi'tal'noy khirurgicheskoy kliniki pediatricheskogo fakul'teta II Moskovskogo meditsinskogo instituta imeni I.V. Stalina.  
(MITRAL STENOSIS, surg.  
indic. & technic)

ABRAMYAN, A.Ya., prof.; ATABEKOV, D.N., prof.; VOROBT'SOV, V.I., kand. med. nauk; GASPARYAN, A.M., prof.; GREBENSHCHIKOV, G.S., prof.; DZHAVAD-ZADE, M.D., kand. med. nauk; DUNAYEVSKIY, L.I., dots., prof.; LOPATKIN, N.A., dots.; POMERANTSEV, A.A., dots.; FYTEL', A.Ya., prof.; RIKHTER, G.A., prof.; RUSANOV, A.A., prof.; SMIRNOV, A.V., prof.; SYROVATKO, F.A., prof.; TSULUKIDZE, A.P., prof.; SHAPIRO, I.N., prof.; EPSHTEYN, I.M., prof.; PETROVSKIY, B.V., prof., otv. red.; BAKULEV, A.N., akademik, red.; GULYAYEV, A.V., prof.; YEGOROV, B.G., prof., red.; KUPRIYANOV, P.A., prof., red.; PANKRAT'YEV, B.Ye., prof., red.; FILATOV, A.N., prof., red.; CHAKLIN, V.D., prof., red. GORELIK, S.L., red.; GABERLAND, M.I., tekhn. red.

[Multivolume manual on surgery] Mnogotomnoe rukovodstvo po khirurgii. Moskva, Gos. izd-vo med. lit-ry. Vol.9. [Surgery of the urinary and genital organs and the retroperitoneal space] Khirurgiia mochevykh i polovykh organov i zabriushinogo prostranstva. 1959. 630 p. (MIRA 15:4)

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for Petrovskiy, Yegorov, Kupriyanov).

(RETROPERITONEAL SPACE---SURGERY)

(GENITOURINARY ORGANS---SURGERY)

ANICHKOV, M.N., dots.; ANTELAVA, N.V., prof.; BISENKOV, N.F., kand.  
med. nauk; BOGUSH, L.K., prof.; GRIGOR'YEV, M.S., prof.;  
DYSKIN, Ye.A., kand. med. nauk; KEVESH, Ye.L., prof.; KOLESOV, A.P.;  
KOLESOV, V.I., prof.; KUPRIYANOV, P.A., prof.; LINBERG, B.E.,  
prof.; MAKSIMENKOV, A.N., prof.; OSIPOV, B.K., prof.;  
SAVITSKIY, A.I., prof.; UVAROV, B.S.; UGLOV, F.G., prof.;  
KHOVDIN, S.A., prof.; PETROVSKIY, B.V., prof., otv. red.;  
BAKULEV, A.N., akademik, red.; GULYAYEV, A.V., prof., red.;  
YEGOROV, B.G., prof., red.; PANKHAT'YEV, B.Ye., prof., red.;  
PYTEL', A.Ya., prof., red.; RIKHTER, G.A., prof., red.;  
FILATOV, A.N., prof., red.; CHAKLIN, V.D., prof., red.;  
RYBUSHKIN, I.N., doktor med. nauk, red.; RULEVA, M.S., tekhn.  
red.

[Multivolume manual on surgery] Mnogotomnoe rukovodstvo po  
khirurgii. Moskva, Medgiz. Vol.5. [Chest surgery; thoracic wall,  
pleura, and lungs] Khirurgiia grudi; grudnaia stenka, plerva i  
legkie. 1960. 727 p. (MIRA 15:3)

1. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for  
Antelava, Bogush, Maksimenkov, Savitskiy, Kholdin, **Chaklin**).
2. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for  
Kupriyanov, Petrovskiy, Yegorov).  
(CHEST--SURGERY)

BAKULEV, A.N., akad.; BLOKHIN, N.N.; BOGUSH, L.K.; VELIKORETSKIY, A.N., prof.;  
VOZNESENSKIY, V.P., prof., zasl. deyatel' nauki [deceased]; GULYAYEV,  
A.V., prof.; DANILOV, I.V., prof.; DUBOV, M.D., doktor med. nauk; KA-  
ZANSKIY, V.I., prof.; LIMBERG, A.A.; LINBERG, B.E., zasl. deyatel'  
nauki, prof.; MEDVEDEV, I.A., dots.; MESHALKIN, Ye.N., prof.; MIRONO-  
VICH, N.I., doktor med. nauk; NIKOLAYEV, O.V., prof.; NIFONTOV, B.V.,  
doktor med. nauk; PETROVSKIY, B.V.; PRIOROV, N.N. [deceased]; RIKHTER,  
G.A., prof.; ROVNOV, A.S., prof.; RUFANOV, I.G.; STRUCHKOV, V.I.;  
SHRAYBER, M.I., doktor med. nauk; GORELIK, S.L., dots., red.; YELANSKIY,  
N.N., red.; SALISHCHEV, V.E., zasl. deyatel' nauki, prof. [deceased];  
RYBUSHKIN, I.N., red.; BUL'DYAYEV, N.A., tekhn. red.

[Surgeon's reference book in two volumes] Spravochnik khirurga v dvukh  
tomakh. Pod obshchei red. A.N. Velikoretskogo i dr. Moskva, Medgiz.  
(MIRA 14:12)  
Vol. 1. 1961. 564 p.

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for Blokhin,  
Petrovskiy, Priorov, Rufanov, Limberg). 2. Chlen-korrespondent Akademii  
meditsinskikh nauk SSSR (for Bogush, Struchkov, Yelanskiy).  
(SURGERY)

BOGOSLAVSKIY, R.V., prof.; BREGADZE, I.L., prof.; VELIKORETSKIY, A.N.,  
prof.; VINOGRADOV, V.V., doktor med. nauk; GROZDOV, D.M., prof.;  
GUIYAYEV, A.V., prof.; DZHAVADYAN, A.M., doktor med. nauk;  
KRAVCHENKO, P.V., prof.; LOBACHEV, S.V., prof.; NIKOLAYEV, O.V.,  
prof.; FYTEL', A.Ya., prof.; SMIRNOV, A.V., prof.; FAYERMAN, I.L.,  
prof.; FUTORYAN, Ye.S.; SHELAGU, A.A., zas. deyatel' nauki, prof.;  
BOLYAN, R.O., prof.[deceased]; PETROVSKIY, B.V., prof., otv. red.;  
SENCHILO, K.K., tekhn. red.

[Multivolume manual on surgery]Krogotomnoe rukovodstvo po khirurgii.  
Otv.red.B.V.Petrovskii. Moskva, Medgiz. Vol.8.[Surgery of the liver,  
biliary tract, pancreas, and spleen]Khirurgiia pecheni, zhelchnykh  
putei, podzheludochnoi zhelezy i selezenki. Red.toma A.V.Guliaev.  
1962. 659 p. (MIRA 15:6)

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for Petrovskiy).  
(LIVER--SURGERY) (PANCREAS--SURGERY) (SPLEEN--SURGERY)

BAKULEV, A.N., akademik; BUNYATYAN, A.A., kand. med. nauk;  
BURAKOVSKIY, V.I., doktor med. nauk; BUYALOV, V.M., dots.;  
GULYAYEV, A.V., prof.; ZAKETSKIY, V.V., doktor med. nauk;  
IVANOV, V.A., prof.; KOLESNIKOV, S.A., prof.; LOBACHEV,  
S.V., prof.; LOPUKHIN, Yu.M., prof.; MURATOVA, Kh.N., doktor  
med. nauk; PETROVSKIY, B.V., zasl. deyatel' nauki RSFSR, prof.;  
SAVEL'YEV, V.S., prof.; SERGEYEV, V.M., doktor med. nauk;  
SOLOV'YEV, G.M., prof.; SOLOV'YEVA, I.I.; BURAKOVSKIY, V.I.,  
red.

[Multivolume manual on surgery] Mnogotomnoe rukovodstvo po khi-  
rurgii. Moskva, Meditsina. Vol.6. Pt.1. 1965. 577 p.  
(MIRA 18:10)

1. Deystvitel'nyy chlen AMN SSSR (for Petrovskiy).

KRASNOVSKIY, A.A.; YEROKHIN, Yu.Ye.; GULYAYEV, B.A.

Effect of temperature on the luminescence of bacterioviridin and its state in photosynthesizing bacteria. Dokl. AN SSSR 152 no.5:1231-1234 0 '63. (MIRA 16:12)

1. Institut biokhimii im. A.N.Bakha AN SSSR i Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. 2. Chlen-korrespondent AN SSSR (for Krasnovskiy).

\*



L 8709-65 EWT(1)/EWT(m)/EEC(b)-2 LJP(c)/APGC(b)/ESD(gp)/BSU/AS(mp)-2/AFWL/ESD(t)/  
ASD(a)-5 RM 8/0020/64/158/002/0450/0460  
ACCESSION NR: AP4045638

AUTHOR: Litvin, F. F.; Gulyayev, B. A.

TITLE: Luminescence<sup>λ</sup> and absorption spectra of chlorophyll-a mono-  
layers and films

SOURCE: AN SSSR. Doklady\*, v.158, no. 2, 1964, 460-463

TOPIC TAGS: tetrapyrrol pigment, chlorophyll a, luminescence  
spectrum, absorption spectrum, chlorophyll absorption spectrum,  
chlorophyll luminescence spectrum

ABSTRACT: An attempt has been made to detect the luminescence of  
chlorophyll-a in monolayers, to investigate its spectra, and to deter-  
mine the dependence of the absorption and luminescence spectra on pig-  
ment concentration, temperature, and certain other factors. The re-  
sults were compared with data obtained previously for live leaves or  
algae. The luminescence of chlorophyll in monolayers was definitely  
established at room temperature and at low temperatures. An increase  
in the concentration of chlorophyll resulted in a gradual weakening  
of shortwave maxima and the appearance of new maxima in the longwave

Card 1/3

L 8709-65

ACCESSION NR: AP4045638

range. It was assumed that these phenomena are caused by the aggregation of chlorophyll. This fact, as well as the observation that the new maxima become predominant in the luminescence spectrum, while the corresponding maxima in the absorption spectrum have not yet been developed, can be explained by the migration of excitation energy from chlorophyll shortwave forms to longwave forms which are responsible for the longwave maxima. A parallel is drawn with energy migration in live plants. Low temperatures cause a considerable increase in the intensity of the longwave maxima, but have a lesser effect on the shortwave maxima. The general character of the temperature changes in the luminescence spectra is close to that in vivo. Some monolayers are sensitive to light and disaggregate and bleach under its influence. Longwave forms (absorption maximum, 740 m) are more stable against the effects of light and seem also to protect the shortwave forms. Bleaching was observed both in the presence and in the absence of air; it was inhibited at  $-196^{\circ}\text{C}$ ; heating to  $100^{\circ}\text{C}$  did not markedly affect the luminescence spectra of the specimens. All these facts indicate the formation of aggregated chlorophyll states under certain conditions, and energy migration from less aggregated forms to longwave, densely packed forms. A certain resemblance be-

Card 2/3

L 8709-65

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ACCESSION NR: AP4045638

tween the nodal systems studied and vivo systems exists. However, differences are to be expected because of the presence of protein-lipid complexes which accompany the pigments in vivo. It was observed that the spectra of monolayers and films, unlike those of living organisms, are not sensitive to heating. Gratitude is expressed to A. A. Krasnovskiy for his valuable advice and continuous attention to the study. Orig. art. has: 4 figures.

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

SUBMITTED: 19Feb64

ATD PRESS: 3112

ENCL: 00

SUB CODE: OC, OP

NO REF SOV: 005

OTHER: 005

Card 3/3

LITVIN, F.F.; GULYAYEV, B.A.; SINESHCHEKOV, V.A.

Aggregated forms of chlorophyll-a, chlorophyll-b, and  $\beta$ -carotene in monolayers and membranes; migration of energy between them and within the complex (chlorophyll-a +  $\beta$ -carotene). Dokl. AN SSSR 162 no.5:1184-1187 Je '65. (MIRA 18:7)

1. Moskovskiy gosudarstvennyy universitet. Submitted June 27, 1964.

L 39870-66 EWT(1) SCTB DD/GE-2

ACC NR: AP6018144

SOURCE CODE: UR/0020/65/162/005/1184/1187

AUTHOR: Litvin, F. F.; Gulyayev, B. A.; Sineshchekov, V. A. 118

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

TITLE: Aggregated forms of chlorophyll<sup>1</sup> A, chlorophyll B, and beta-carotene in monolayers and films; migration of energy between them and in the 'chlorophyll A + beta-carotene' complex

SOURCE: AN SSSR. Doklady, v. 162, no. 5, 1965, 1184-1187

TOPIC TAGS: chlorophyll, absorption spectrum, pigment, plant chemistry

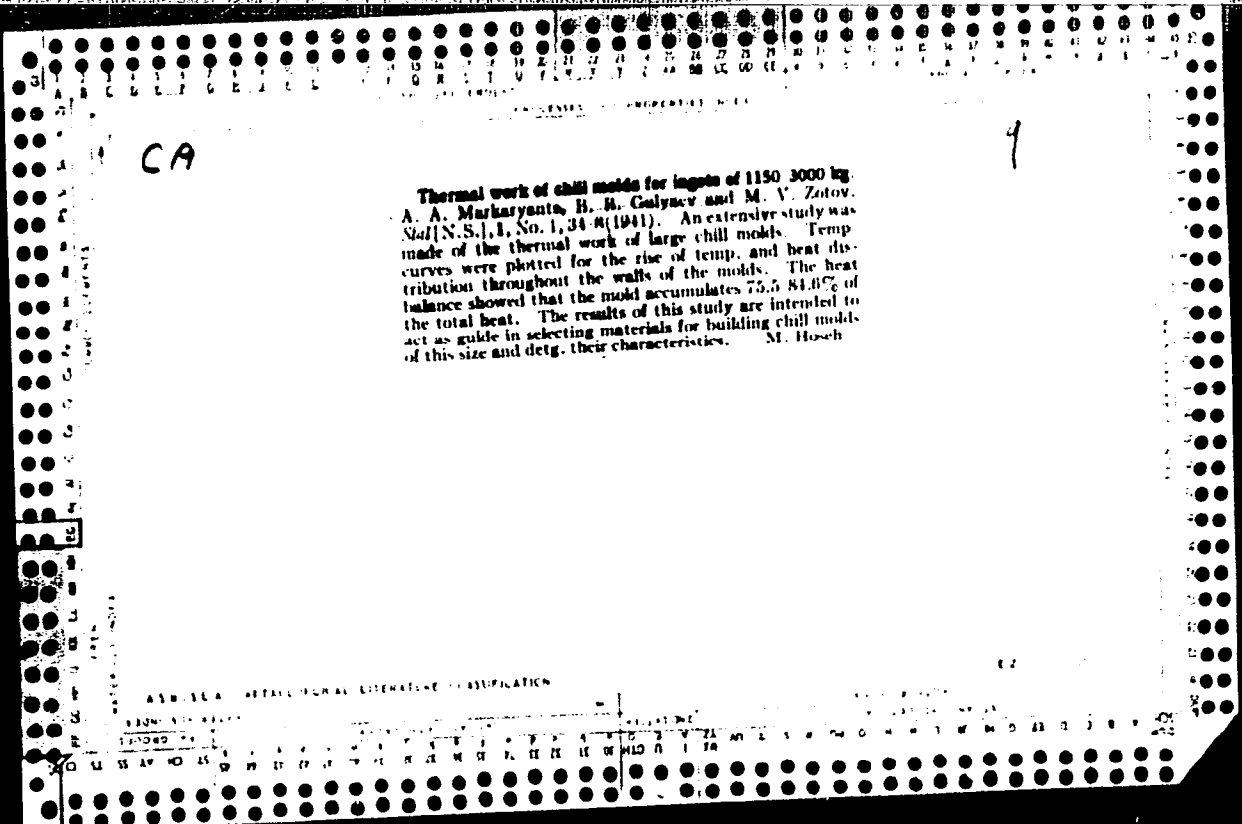
ABSTRACT: The absorption spectra of monolayers and thin films of predominantly trans-forms of carotene differ from the spectra of the pigment in the initial solution by a shift in the long-wave direction and predominance of the longest wave maximum, 520 millimicrons. When the films are stored, a new form appears, with an even more substantial "red shift" to 536-540 millimicrons. This shift is explained by strong interaction of the chromophores and the appearance of aggregates (polymers and microcrystals of the pigment). In mixed films of chlorophyll and beta-carotene, an additive spectrum was obtained only at a high relative concentration of carotene ( $C_{\text{chlorophyll}}/C_{\text{carotene}} \leq 0.6$ ), indicating a mutual influence of the pigments on the conditions of their aggregation. The migration of energy between beta-carotene and chlorophyll A was investigated according to the spectra of excitation of

Card 1/2

21

Cooling of a steel ingot. V. M. Tagrey and B. H. Gulyaev. *Metallurg* 14, No. 8, 21-38 (1939); cf. C. A. 33, 16737. —A 7-ton octagonal ingot 820 mm. thick at the top and 780 mm. at the bottom reached the temp. of the liquidus throughout the entire ingot within 10 min. after pouring. The center of the ingot remained at const. temp. for 180 min. before solidification began and thereafter the cooling rate was faster than in any other part of the ingot. The pouring temp. had very little effect on cooling as superheating only accounted for 4-6% of the total heat capacity of the steel. The ingot mold absorbed 70-85% of the heat given off during cooling and radiation accounted for 9.8-22.8%, the remainder being lost by convection.  
H. W. Rathmann

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION



100 AND 4TH CODES

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

9

Behavior of nonmetallic inclusions in the process of crystallization of acid martensite steel. B. B. Gulyayev. *Bull. Acad. Sci. U. R. S. S., Classe sci. tech.* 1942, No. 3, 1, 57-75. In liquid melt at pouring temp. the greatest part of nonmetallic inclusions is in the form of dispersed phase. The columnar crystals cease their growth upon reaching a definite min. temp. gradient in the liquid part of the casting. Mixing of the metal during pouring and sedimentation are responsible for the intensive coagulation of nonmetallic inclusions at the beginning of hardening of the casting. The coagulation of nonmetallic inclusions can be combated by the use of min. radius of casting and by the most quiet method of pouring the molten metal. Pouring of metal at lowest practicable temp. also is advised. G. M. Kosolovskii.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

CONCERN ELEMENTS

NATURAL INDEX

1ST AND 2ND ORDERS

100 AND 4TH CODES



GULYAYEV, B.B.

DOC TECH SCI

Dissertation: "Processes of the Origin of Heterogeneity in Steel Ingots and Castings."

18 October 49

Inst of Metallurgy imeni A.A. Baykov, Acad Sci USSR.

SO Vecheryaya Moskva  
Sum 71

GULYAYEV, B. B.

TA 10 06

USSR/Physics - Strength

11 Feb 50

"Periodicity of the Mechanical Properties of Elements,"  
B. B. Gulyayev

"Dok Ak Nauk SSSR" Vol LXX, No 5, pp 797-799

Graphs yield strength (tensile) vs Brinell and Moh  
hardness. Graphically demonstrates periodicity of  
yield strength, relative elongation under tension,  
and modulus of elasticity of elements in tempered  
state at room temperature as function of atomic num-  
ber of elements in periodic table. Submitted by  
14 Dec 49 by Acad S. I. Vavilov.

165T65

CA

7

Periodicity of the effect of additions of elements on the mechanical properties of copper, silver, and gold. B. H. Gulvay. *Doklady Akad. Nauk S.S.S.R.* 74, 1000-02 (1950); cf. C.I. 44, 8710/. Rptl. data on the tensile strength and percentage elongation of binary alloys of Cu, of Ag, and of Au were obtained from the literature. The effect of addn. of 1% an element on the property in the range of solid soln. is expressed by a coeff. for the annealed alloy. The coeffs. can be either pos. or neg. The coeffs. do not support R. Austen's proposal that relative at. size detcs. the sign of the coeff. The coeffs. show a marked periodicity with increasing at. no. of the addn. element. The strength coeff. reaches a max. near the center of a period, while the percentage elongation reached a min. Generally Au showed the greatest effect of a given element and Cu the least effect.  
A. G. Guy

1951

CA

Periodicity of the influence of alloys on the mechanical properties of metals. B. B. Galynov. *Doklady Akad. Nauk S.S.S.R.* 75, 25-8(1950); cf. *C.A.* 44, 8710; 45, 8551A. --Data from the literature were used to determine the influence of alloying elements on Mg, Zn, Cd, Pb, Sn, Al, Fe, Ni, Pt, and Pd in the same manner as was previously done for Cu group elements. The same periodicity in tensile strength and percentage elongation increases was found, and generally a max. strength increase coincided with a max. elongation decrease. The max. effect was found in each period near its center, and the max. was greater for earlier periods. Alloying elements near the base metal were less effective and often caused the strength to decrease.

A. G. Guy

.1957

USSR/Miscellaneous-Metallurgy

Card 1/1

Authors : Gulyaev, B. B., Shpeyzman, V. M., and Kevalenke, P. E.

Title : Metal filling of a channel in a sand-mold

Periodical : Lit. Preizv. 1, 15 - 17, Jan-Feb 1954

Abstract : The basic specific features of metal filling in a sand-mold channel are as follows: 1) During the process of mold-filling the temperature of the mold decreases but its viscosity increases. The filling of the mold is done in a comparatively short time within which no stationary motion may be obtained. 2) Chilling of the metal leads to the appearance of solid phases which may have already originated during the filling of the mold and this is the reason for discontinuation of motion lasting till the completion of filling. The ability of the metal to fill the mold is usually defined as its flowability. Three references. Table, graphs.

Institution: ....

Submitted : ....

CHVORINOV, N.; GULYAYEV, B.B., professor, doktor tekhnicheskikh nauk, redaktor;  
SYSOYEV, V.Ye., redaktor; GERASIMOVA, Ye.S., tekhnicheskiy redaktor

[Hardening of castings; a collection of articles. Translated from the  
Czech.] Zatverdevanie otlivok; sbornik statei. Moskva, Izd-vo ino-  
strannoi lit-ry, 1955. 140 p. (MLRA 9:2)  
(Founding)

GULYAYEV B.B.

AL'TGAUZEN, O.N., kandidat fiziko-matematicheskikh nauk; BERNSHTEYN, M.I., kandidat tekhnicheskikh nauk; BLANTER, M.Ye., doktor tekhnicheskikh nauk; BOKSHTEYN, S.Z., doktor tekhnicheskikh nauk; BOLKHOVITINOVA, Ye.N., kandidat tekhnicheskikh nauk; BORZDYKA, A.M., doktor tekhnicheskikh nauk; BUNIN, K.P., doktor tekhnicheskikh nauk; VINOGRAD, M.I., kandidat tekhnicheskikh nauk; VOLOVIK, B.Ye., doktor tekhnicheskikh nauk [deceased]; GAMOV, M.I., inzhener; GELLER, Yu.A., doktor tekhnicheskikh nauk; GORALIK, S.S., kandidat tekhnicheskikh nauk; GOL'DENBERG, A.A., kandidat tekhnicheskikh nauk; GOTLIB, L.I., kandidat tekhnicheskikh nauk; GRIGOROVICH, V.K., kandidat tekhnicheskikh nauk; GULYAYEV, B.B., doktor tekhnicheskikh nauk; DOVGAL'EVSKIY, Ya.M., kandidat tekhnicheskikh nauk; DUDOVTS'EV, P.A., kandidat tekhnicheskikh nauk; KIDIN, I.N., doktor tekhnicheskikh nauk; KIPNIS, S.Kh., inzhener; KORITSKIY, V.G., kandidat tekhnicheskikh nauk; LANDA, A.F., doktor tekhnicheskikh nauk; LEYKIN, I.M., kandidat tekhnicheskikh nauk; LIVSHITS, L.S., kandidat tekhnicheskikh nauk; L'VOV, M.A., kandidat tekhnicheskikh nauk; MALYSHEV, K.A., kandidat tekhnicheskikh nauk; MEYERSON, G.A., doktor tekhnicheskikh nauk; MINKOVICH, A.N., kandidat tekhnicheskikh nauk; MOROZ, L.S., doktor tekhnicheskikh nauk; NATANSON, A.K., kandidat tekhnicheskikh nauk; NAKHIMOV, A.M., inzhener; NAKHIMOV, D.M., kandidat tekhnicheskikh nauk; POGODIN-ALEKSEYEV, G.I., doktor tekhnicheskikh nauk; POPOVA, N.M., kandidat tekhnicheskikh nauk; POPOV, A.A., kandidat tekhnicheskikh nauk; RAKHSHTADT, A.G., kandidat tekhnicheskikh nauk; ROGEL'BERG, I.L., kandidat tekhnicheskikh nauk;

(Continued on next card)

AL'TGAUZEN, O.N.---- (continued) Card 2.

SADOVSKIY, V.D., doktor tekhnicheskikh nauk; SALT'YKOV, S.A., inzhener; SOBOLEV, N.D., kandidat tekhnicheskikh nauk; SOLODIKHIN, A.G., kandidat tekhnicheskikh nauk; UMANSKIY, Ya.S., kandidat tekhnicheskikh nauk; UTEVSKIY, L.M., kandidat tekhnicheskikh nauk; FRIDMAN, Ya.B., doktor tekhnicheskikh nauk; KHIMYSHIN, F.F., kandidat tekhnicheskikh nauk; KHRUSHCHEV, M.M., doktor tekhnicheskikh nauk; CHERNASHKIN, V.G., kandidat tekhnicheskikh nauk; SHAPIRO, M.M., inzhener; SHKOL'NIK, L.M., kandidat tekhnicheskikh nauk; SHRAYBKR, D.S., kandidat tekhnicheskikh nauk; SHCHAPOV, N.P., doktor tekhnicheskikh nauk; GUDTSOV, N.T., akademik, redaktor; GORODIN, A.M., redaktor izdatel'stva; VAYNSHT'YRN, Ye.B., tekhnicheskij redaktor

[Physical metallurgy and the heat treatment of steel and iron; a reference book] Metallovedenie i termicheskaya obrabotka stali i chuguna; spravochnik. Pod red. N.T.Dudtsova, M.L.Bernshteina, A.G. Rakhshadta. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 1204 p. (MLRA 9:9)

1. Chlen -korrespondent Akademii nauk USSR (for Bunin)  
(Steel--Heat treatment) (Iron--Heat treatment)  
(Physical metallurgy)



Gulyayev, B.B.

Distr: 4E4j/4E2c

✓ The solidification of alloys. B. B. Gulyayev and G. H. Maslitskii. *Novos i Teorii i Prakticheskie Prevedeniya* (Moscow-Leningrad: Gosudarst. izdatel. Mashinostroitel. Lit.) *Sbornik* 1956, 67-70; *Referat. Zhur.*, Mei. 1954, Abstr. No. 12162. — Studies were conducted, by the thermal method, on the solidification of alloys of various systems: solid solns. of Al with 8.7, 23.8, and 42.4% Zn; alloys with a eutectic of Al with 3.8, 7.5, 10.9, and 12.3% Si; alloys with a peritectic of Al with 28.9, 43.5, and 33.0% Ni. The alloys melted and formed into cylinders 25-75 mm. in diam. and 0.8 m. high. Chromel-alumel thermocouple junctions were inserted at the surface, in the center of the ingot, and also spaced 25, 50, 75, and 100 mm. from the center. A record of the temp. was made by using a 0-gohm electronic potentiometer. From the graphically constructed cooling curves, the time of passage through the separate stages (crit. points) is characterized at different points in the cross section of the casting. For Al-Zn alloys, solidification is characterized by 2 curves (for liquidus and for solidus); for Al-Si alloys, 3 (liquidus, beginning and end of eutectic transformation); for Al-Ni, 5 (liquidus, beginning of separation of Al<sub>3</sub>Ni, end of the conversion Al<sub>3</sub>Ni → Al<sub>2</sub>Ni, end of the pptn. of Al<sub>2</sub>Ni from the melt, and solidus). In all cases solidification was strictly sequential, i.e. each stage of solidification, in whatever layer of the ingot was recorded later than that of the neighboring layer if the latter was closer to the surface. Solidification of ingots of pure Al conforms to the parabolic law for the first 1/2 of its radius. The alloys show sharply different graphs. Thus, e.g., the curves for the Al-Zn alloys show continuous slowing down of "spread" of the liquidus in the depth of the ingot and continuous acceleration of spread of the solidus. Thus also does the solidification of the eutectic alloy Al + 12.31% Si depart from the parabolic law; however it also crystallizes at a const. temp., as does pure Al. C. H. Fuchs

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End

GULYAYEV, B.B.

Conference on metal solidification. Izv. AN SSSR Otd. tekhn. nauk no. 3:  
174-176 Mr '56. (MIRA 9:7)  
(Moscow--Solidification--Congresses)

GULYAYEV, B.B.

Influence of casting temperature on solidification of steel  
 castings. B. B. Gulyayev, I. I. Lopyrev, and P. H. Kova-  
 lenko. *Izvestia Prochnostno* 1956, No. 3, 20-2. A study of  
 80-mm diam. and 180-cm. long castings made in green sand  
 showed that the elimination of the effect of overheating and  
 solidification occur together and parallel. With slight over-  
 heating, solidified skin forms on contacting the mold and  
 grows according to the square-root law. Pronounced over-  
 heating holds the metal liquid for some time after the contact  
 with the mold, and solidification then follows almost a  
 straight-line law. Overheating has but slight effect on total  
 solidification time. J. D. Cat

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GULYAYEV, B.B.

800, emf

1659\* (Russian) Investigating Non-Metallic Inclusions in Castings With Radioactive Isotopes. *Izledovanie zasorov v otlivkakh pri primeneni radioaktivnykh isotopov.* B. B. Gulyayev, Iu. F. Burovskii, Z. V. Sigaleva, and E. S. Sokolova. *Truffize* *Profound* no. 8, Aug. 1956, p. 25-27.

Studied primarily the inclusions carried into the casting from the walls of the mold. The ~~Walls~~ ~~isotopes~~ was mixed into the molding sand and the amount of inclusions in the casting was determined by autoradiography.

178 255 172

GULYAYEV, B.B., doktor tekhnicheskikh nauk; DEMINA, L.G., inzhener.

Control of castings by means of radioactive isotopes. Lit.proizv.  
no.9:18-20 S '56. (MLRA 9:11)

..(Founding--Quality control)  
(Radioisotopes--Industrial applications)

GULYAYEV, B.B., doktor tekhnicheskikh nauk; GORYUNOV, I.I., kandidat tekhnicheskikh nauk.

Collected works on "Heat treatment and properties of steel castings." Lit.proizv. no.9:29-30 S '56. (MLRA 9:11)  
(Steel castings--Heat treatment)

GULYAYEV, B.B.

✓13266\* (Russian.) Solidification of Ingots and Castings.  
Zatverdevanie slitkov i odlivok. N. I. Gudtsov and B. B.  
Gulyaev. Vestnik Akademii Nauk SSSR, v. 20, no. 5, May 1976,  
p. 22-28.

A general review of the historical development of the theory  
of crystallization in ingots. Special attention is given to the  
gradual crystallization theory.

of

2

Gulyayev K.B

~~KHINKIN~~, Mark I'vovich; GULYAYEV, B.B., nauchnyy red.; ISAYEV, V.A., red.;  
FRUMKIN, P.S., tekhn. red.

[Improving the mechanical properties and increasing the solidity of  
steel castings] Uluchshenie mekhanicheskikh svoistv i povyshenie  
plotnosti stal'nykh otlivok. Leningrad, Gos. soiuзное izd-vo sudo-  
stroit. promyshl., 1957. 109 p. (MIRA 11:7)  
(Steel castings)



SOV/137-58-9-18674

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 75 (USSR)

AUTHORS: Gulyayev, B.B., Magnitskiy, O.N.

TITLE: Physicochemical Processes in the Solidification of an Ingot  
(Fiziko-khimicheskiye protsessy zatverdevaniya slitka)

PERIODICAL: V sb.: Fiz.-khim. osnovy proiz-va stali. Moscow, AN SSSR,  
1957, pp 659-682. Diskuss. pp 781-791

ABSTRACT: This is a description of the results of an investigation of the processes occurring in the solidification of Al and of various alloys thereof with Zn, Si, and Ni. The methods used involved measurement of temperature and pouring the metal out of the mold; comparison of the parameters of the crystallization process with phase diagrams of the corresponding alloys was also employed. Ingots measuring 250x710 mm made by rising (bottom) pouring were subjected to temperature measurement by means of 6 chromel-alumel thermocouples arranged along a radius of the middle cross section of the ingot. Temperature curves were derived for alloys forming solid solutions (with Zn), with eutectic transformations (with Si) and with peritectic transformations (with Ni). At the instant when the metal

Card 1/3

SOV/137-58-9-18674

Physicochemical Processes in the Solidification of an Ingot

reached the level of the thermocouples, reheating was stopped completely and the process of solidification began practically at the liquidus temperature. No supercooling of the metal was observed. The liquidus and the peritectic and eutectic transformation points were recorded. The solidus point is weakly defined in Al-Zn alloys. The pouring experiments were run with ingots of 105x260 mm diam. The resultant ingot bodies were cut open and investigated. Gamma photography of the cut ingots was performed, and their wall thicknesses were compared with the results of analyses of prior temperature measurements by the method of similarity. Some inconsistency was found in the data obtained. This was explained by the fact that when the metal was poured into ingots, a pourability limit comes into being that does not agree with the front of crystallization of the metal, since some of the crystals are removed from the two-phase layer while a portion of the liquid remains between the growing dendrites. Curves of solidification were drawn in dimensionless coordinates for all of the alloys investigated. These determined all the phases of solidification of the metal of alloys as one of the components is varied. It is asserted that both pure Al and all the alloys are subject to the law of successive crystallization. The concept that ingots solidify from a deeply supercooled state is refuted. The process of solidification of ingots from pure metals and eutectic alloys is defined as one of removal of the heat

Card 2/3

SOV/137-58-9-18674

Physicochemical Processes in the Solidification of an Ingot

of crystallization through the metal previously solidified, while in the case of alloys hardening over a temperature interval this occurs via a liquid phase. It is noted that the mechanism of solidification is the same for all metals and alloys. A law of successive crystallization is formulated: All processes of transformation occurring in the solidification of ingots or castings of metals and their alloys begin at the surface and gradually progress toward the axis. The boundary of each transformation moves at its own speed, but in a rigorous order of succession.

V.N.

1. Metals--Processing
2. Metals--Crystallization
3. Metals--Temperature factors
4. Thermocouples--Performance
5. Metals--Phase studies

Card 3/3

GULTAYEV, B.B.; KOLACHEVA, O.V.; LUPYREV, I.I.; SHAPRANOV, I.A.

"Casting in shell molds; review of foreign publications" by N.A.  
Sokolov. Lit.proizv. no.1:27-28 Ja '57. (MLRA 10:3)  
(Founding) (Shell molding (Founding))

GULYAYEV, B.B.

1-4E2C

18  
 Properties of cast alloys. B. B. Gulyayev, I. A. Glushko, V. M. Shpil'man, and F. B. Kovalenko. *Zashchita* (Protection) 1957, No. 2, 11-16. Mech. properties, burnability, fluidity, and casting characteristics are given for C 0.3-0.4, Mn 0.50-0.60, Si 0.17-0.37, Cr 0.30-1.00, with 0.20-0.40 Mo or 0.50-0.80 W with and without 1.30-1.00% Ni steel; and of C 0.25-0.35, Mn 0.25-0.50, Si 0.70-1.10, Cr 0.70-1.40, Ni 1.50-1.60, Cu 1.30-1.60% before and after heat-treatment. L. D. Cit.

9/10/57

Ref. 005

GULYAYEV, B.B.

Conference on the shrinkage of metals. Izv.AN SSSR.Otd.tekh.nauk  
no.2:166-168 F '57. (MLRA 10:5)  
(Metallurgy) (Founding)

GULAYEV, B. B.

practical fact of contact zone in ingot cast molds. Micro-  
analytical aspects of metal in contact with hot steel are  
described.

GULYAYEV, B. D.

25(1)

PHASE I BOOK EXPLOITATION SOV/1440

Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy  
promyshlennosti. Leningradskoye oblastnoye pravleniye

Lit'ye povyshennoy tochnosti (High-precision Casting) Moscow,  
Mashgiz, 1958. 196 p. (Series: Its: Sbornik, kn.45)  
7,000 copies printed.

Ed.: A.N. Sokolov; Tech. Ed.: L.V. Sokolova; Managing Ed. for  
Literature on Machine-building Technology (Leningrad Division,  
Mashgiz): Ye. P. Naumov, Engineer.

PURPOSE: This book is intended for engineers and technicians at  
foundries and planning and research institutes.

COVERAGE: The book contains the transactions of a special  
conference called in November, 1956, by the Leningrad Oblast  
Administration of the Nauchno-tekhnicheskoye obshchestvo NTO  
(Scientific and Technical Society of the Machine-building  
Industry). The articles describe advanced techniques used in

APPROVED FOR RELEASE: 09/19/2001

CIA-RDP86-00513R000617320011-0"



High-precision Casting

SOV/1440

precision-casting processes such as shell molding, investment casting, pressure die casting, press die casting (called in Russian "forging of liquid metal"), and suction casting. Special attention is given to the production of large precision castings, one of the principal problems in the industry. At the same time, methods of improving the precision of sand-mold castings are examined. Experience gained in the mechanization of precision-casting and shell-molding processes is reported. Information is given on the present state of precision casting, both in the USSR and elsewhere. No personalities are mentioned.

TABLE OF CONTENTS:

Preface

3

Gulyayev, B.B. Production of Precision Castings Outside  
the Soviet Union

5

Shub, I. Ye. [Chairman, Committee on Special Methods of  
Casting, Leningrad Oblast Administration of the Scientific

Card 2/5

High-precision Casting	SOV/1440	
and Technical Society of the Machine-building Industry. Equipment for Producing Castings in Shell Molds		18
Kolacheva, O.V. Heat Conditions and Thermal Stability of Shell Molds		36
Obolentsev, F.D. One-piece Sinterable Molds as a Means of Increasing the Precision of Castings		43
Dobrozrakov, O.I. Production of Iron Castings in Shell Molds		55
Belogay, V.M. Experience Gained at a Plant in Shell Molding		61
Goryunov, I.I. Increasing the Precision of Investment Castings		64

Card 3/ 5

High-precision Casting	SOV/1440	
Golovanov, N.N. New Equipment for Investment Casting		76
L'vov, A.A. Experience Gained at a Plant in the Production of Large Steel Investment Castings		94
Lyashchenko, N.N. Gating Systems for Investment Casting		99
Obolentsev, F.D., and V.P. Kalenov. Effect of Various Factors on the Formation of Cracks in Molds During the Melting-out of Patterns		107
Plyatskiy, V.M., and N.N. Belousov. Recent Achievements in Producing Cast Blanks With the Use of Pressure		112
Goryunov, I.I., M.F. Makel'skiy and A.A. Demidova. Pressure Casting		127
Shchegolev, A.A. New Development in the Pressure Casting of Brass		138

Card 4/5

High-precision Casting	SOV/1440	
Sobolev, A.D. Experience Gained in the Production of Large Pressure Castings		150
Krasil'shchik, N.L. Experience Gained in Press Die Casting		156
Mednikov, Z.G., and R.N. Trofimov. Press Die Casting		168
Belousov, N.N., and A.A. Dodonov. Production of Castings With the Aid of Suction		176
Shornikov, P.N. Production of Casting Molds by Pressing in Hydraulic Presses		185
Vishnyakov, N.V. Increasing the Precision of Castings Made in Sand Molds		190

AVAILABLE: Library of Congress

GO/rj  
5-5-59

Card 5/5

25(1)

PHASE I BOOK EXPLOITATION

SOV/1500

Vasilevskiy, P. F., B.B. Gulyayev, D.P. Ivanov, V.V. Ioda, I.P. Karev,  
G.I. Kletskin, A.G. Korotkov, A.S. Murakhin, Yu.A. Nekhendzi, P.G.  
Petrov, and M.A. Smelov

Liteynaya tekhnika; 2-ya Mezhdunarodnaya vystavka liteynoy tekhniki i liteynyye  
tsekhi FRG i GDR (Foundry Technology; Second International Exhibition of  
Foundry Technology and the Foundries of the FRG and GDR) Moscow, Mashgiz, 1958.  
212 p. 3,500 copies printed.

Ed.: P.F. Vasilevskiy; Ed. of Publishing House: A.I. Sirotin, Engineer; Tech. Ed.:  
A.Ya. Tikhonov; Managing Ed. for Literature on Heavy Machine Building (Mashgiz):  
S.Ya. Golovin, Engineer.

PURPOSE: The purpose of this book is to acquaint readers with new developments in  
foundry technology as presented at the 23rd International Congress of Foundrymen  
held in Dusseldorf, Germany in 1956.

COVERAGE: The Soviet delegation under the leadership of P.G. Petrov, Engineer, and  
his deputy D.P. Ivanov, along with nine other engineers, attended the Congress of

Card 1/6

Foundry Technology (Cont.)

SOV/1500

Foundrymen and the Foundry Exhibition held in Duesseldorf September 1 to 9, 1956. In this book the delegates present a joint report on the state of art in the foundries and research institutes which they visited. The book contains many photographs and diagrams of the machinery and equipment used in foundries and also photographs of finished foundry products. Illustrations accompany the technical descriptions and technical data. One chapter deals with leading German foundries and the major automotive and machine-building plants which maintain their own foundries. Another chapter deals with research and scientific institutes in Germany in which problems of melting and casting are studied. Finally, the authors attempt to evaluate German methods and techniques and compare them with their own. There are no references.

TABLE OF CONTENTS:

Foreword	3
Ch. I. 23rd International Congress of Foundrymen	7
Ch. II. Second International Foundry Exhibition	11
The importance of the second international exhibition	11
Foundry technology at the exhibition	12

Card 2/6

Foundry Technology (Cont.)

SOV/1500

1. General trends in mechanization and automation of processes in foundries	12
2. Equipment for the preparation of molding compounds	17
3. Mold-making machines	27
4. Core-making machines	43
5. Sand slingers	50
6. Machines for casting in shell molds	53
7. Pressure casting machines	60
8. Melting equipment	66
9. Shake-out and cleaning equipment	77
Ch. III. Foundry Technology	92
1. Steel castings	92
2. Castings from high-strength cast iron with spherical graphite	118
3. Nonferrous castings	122
4. Investment castings	125
Ch. IV. Organization of Production and Labor	128
1. Participation of the foundryman in the design of cast parts	128

Card 3/6

Foundry Technology (Cont.)

SOV/1500

2. Safety engineering	130
3. Organization of production and engineering equipment in foundries	132
Ch. V. Foundry Shops in West German Plants	139
General state of production	139
Production of castings in individual plants	142
1. Metallurgical plants and special foundries	142
Ruhrstahl Plant in Goettingen	146
Bochumer Stahlwerke Plant in Bochum	148
Bergische Stahlindustrie Plant in Remscheid	153
2. Automotive and general machine-building plants	153
Maschinenfabrik Esslingen in Esslingen	155
Krauss and Maffey Plant in Munich	157
Alexanderwerke in Remscheid	160
Metalwork Hund and Weber in Gelsenkirchen-Schalke	161
3. Agricultural Machinery Plants	161
International Harvester Corporation (McCormick) in Neusse	161
Lanz Plant in Mannheim	164

Card 4/6



Foundry Technology (Cont.)

SOV/1500

4. Automobile Plants	169
Volkswagen in Wolfsburg	169
BMW in Munich	173
5. Foundry Equipment Plants	175
Badische Maschinenfabrik in Karlsruhe	175
Graue Hannover-Beuhfeld in Hannover	179
Kronning and K* in Hamburg	182
6. Foundries in Leipzig Plants (East Germany)	184
"Less" in Leipzig	184
"MeGu" in Leipzig	187
"Elektrostahlguss" in Leipzig	189
Ch. VI. Training of Foundry Engineers and the Level of Scientific Research Work in the Foundry Industries in West and East Germany	192
1. Foundry Institute of the Rhine-Westphalia Technical College (Aachen, West Germany)	192
2. West German Scientific Research Institute (Duesseldorf)	197

Card 5/6

Foundry Technology (Cont.)

SOV/1500

- 3. Foundry Institute at the Freiberg Mining Academy (East Germany) 198
- 4. East German Scientific Research Institute "Central Institute of Foundry Technology" 202

General Conclusions

206

AVAILABLE: Library of Congress

GO/mas  
5-13-59

Card 6/6

LUPYREV, I. I. (Engr.) KONONOV, D. R., (Prof., Dr. Tech. Sci.) GULYAYEV, B.B.

"Prevention of Hot Cracks"

in book - Improving the Quality of Steel Castings; Transaction of the All-Union Conference, Moscow, Mashgiz, 1958. 214 p.

The authors discuss methods of preventing hot cracks in castings caused primarily by clinging of the sand mold to the casting as the latter shrinks and by unsatisfactory mechanical properties of the steel at the crystallization temperature. It is recommended that the mold be designed so as to lessen its grip on the casting during shrinkage. This may be accomplished by making the mold more flexible, & by maintaining definite distances between flask ribs and projecting parts of the casting. etc. The casting may be strengthened during the solidification period by the use of external coolers and by keeping the sulfur content of the casting below 0.045 percent.

GULYAYEV

FANTALOV, L.I., doktor tekhn.nauk, otvetstvennyy red.; GULYAYEV, B.B.,  
doktor tekhn.nauk, otvetstvennyy red.; CHERNOV, A.N., red.izd-va;  
PRUSAKOVA, T.A., tekhn.red.

[Hydrodynamics of molten metals] Gidrodinamika rasplavlennykh metalov;  
trudy pervogo soveshchaniya po teorii liteynykh protsessov. Moskva,  
Izd-vo Akad. nauk SSSR, 1958. 257 p. (MIRA 11:5)

1. Soveshchaniye po teorii liteynykh protsessov. 1st, 1955.  
(Founding)

*Chukayev, G.P.*

21 (8) **TABLE I** **INDEX** **CONTENTS** **SOVIET**

Vsesoyuznyy nauchno-issledovatel'skiy tsentr prikladnoy fiziki i matematiki i tekhnicheskoy kibernetiki v oblasti yadernykh reaktivnykh mashin i reaktivnykh mashin s vysshim davleniyem i vysshim potentsialom (Moscow, 1957).

Trudy... Nauchno-issledovatel'skiy tsentr prikladnoy fiziki i matematiki i tekhnicheskoy kibernetiki v oblasti yadernykh reaktivnykh mashin i reaktivnykh mashin s vysshim davleniyem i vysshim potentsialom (Moscow, 1957). 355 p. 4,500 copies printed.

Sponsoring Agencies: USSR, Glavnoye upravleniye po ispol'zovaniyu atomnoy energii, and Akademiya nauk SSSR.

Editorial Board of Set: V.I. Dikashin, Academician (Resp. Ed.), M.M. Shumilovskiy (Deputy Resp. Ed.), Yu. S. Zaslavskiy (Deputy Resp. Ed.), L.K. Tatchenko, B.I. Verkhovskiy, S.T. Nazarov, L.I. Petrukhin and N.G. Zeleninskaya (Secretary).

Ed. of Publishing House: P.M. Belyanin; Tech. Ed.: T.F. Polenova.

**PURPOSE:** This book is intended for specialists in the field of machine and instrument manufacture who use radioactive isotopes in the study of materials and processes.

**COVERAGE:** This collection of papers covers a very wide field of the utilization of tracer methods in industrial research and control techniques. The topic of this volume is the use of radioisotopes in the machine- and instrument-manufacturing industry. The individual papers discuss the applications of radioisotope techniques in the study of metals and alloys, problems of friction and lubrication, metal cutting, engine performance, and defects in metals. Several papers are devoted to the use of radioisotopes in the automation of industrial processes, recording and measuring devices, quality control, flowmeters, level gauges, safety devices, radiation counters, etc. These papers represent contributions of various Soviet scientific and laboratory centers. They were published as the proceedings of the All-Union Conference on the Application of Radioisotopes and Stable Isotopes and Radiation in the National Economy and Science, April 4-12, 1957. No personalities are mentioned. References are given at the end of most of the papers.

Chernyakova, N.B. Method for Estimating the Degree of Degradation of Metals 108

Gul'vayev, B.B., Yu.P. Borovskiy, L.M. Potinoy, O.M. Nagmitel'kiy. Study of the Processes of Cast Formation in Sand Molds 112

Vitkin, A.I. (Tsentral'nyy nauchno-issledovatel'skiy institut khimiy metallurgii - Central Scientific Research Institute of Ferrous Metallurgy). Study of the Mechanism of the Basis Process in Hot Tin Plating 119

Jordan, G.G., and E.S. Purman (Nauchno-issledovatel'skiy institut teploenergeticheskogo priborostroyeniya - Scientific Research Institute of Heat-Power Instruments). Use of Nuclear Radiation for the Measurement of Heat-Power Parameters 124

Verkhovskiy, B.I., V.A. Sotnikov, and V.V. Kabanin (Fizicheskii institut imeni P.M. Lebedeva, USSR Academy of Sciences, Leningrad). Measurements Performed With Scintillation Counters 127

Korotkova, V.A. (Fizicheskii institut imeni P.M. Lebedeva - Institute of Physics, Academy of Sciences, USSR). Radiation in Analytical Methods 134

Afanas'yev, V.M. Automation of Measurements and Recording of Radioactive Radiation Intensity 140

Zalichkin, V.G. Study of the Electrical Properties of Ionization Resistors 146

Kegelin, V.G., and A.A. Rudakovskiy (Vsesoyuznyy nauchno-issledovatel'skiy institut - All-Union Coal Research Institute). Use of Radioactive Isotopes in the Automation of Excavating and Drifting Machines 150

Jordan, G.G., and E.S. Purman (Nauchno-issledovatel'skiy institut teploenergeticheskogo priborostroyeniya - Scientific Research Institute for Heat-Power Instrument Making). Measuring the Density of Liquids With Gamma Radiation 153

GULVAZE V

B.B.

85(1,6) PHASE I BOOK EXPLOITATION 307/1592

Akademiya nauk SSSR. Institut mashinovedeniya

Osnovnye voprosy tochnosti, vzaimozamenimosti i tekhnicheskikh izmeneniy v mashinostroyenii (Basic Problems of Accuracy, Interchangeability and Engineering Measurements in Machine Building) Moscow, Mashgin, 1956. 411 p. 4,500 copies printed.

84.1 A.N. Gavrilov, Doctor of Technical Sciences, Professor, Tech. Ed. M.V. Medvedev, Machine Bldg. for Instrumental Working and Tool Making (Mashgin); N.D. Boytsov, Engineer.

PURPOSE: This collection of articles is intended for engineering and scientific workers and for teachers and students of machine and instrument building vtuses.

COVERAGE: This collection of articles presents the works of a conference on basic problems of accuracy, interchangeability and engineering measurements, convened in March 1956 by the Machine Building Technology Commission of IMASH AN SSSR (Institute of Machine Construction of the Academy of Sciences, USSR), the State Committee for Modern Technology, the Committee for Standard Weights and Measuring Instruments under the Council of Ministers, USSR, the Ministries for Machine Building and the Ministry of Higher Education of the USSR. In the articles dealing with accuracy of fabrication, problems of the theory and standards of calculating accuracy of technical drawings, interchangeability and engineering measurements an evaluation of the present state of this field is presented along with the scientific and engineering outlook for the future. Theoretical and practical problems of automatic inspection are discussed. No personalities are mentioned. There are 140 references of which 121 are Russian, 10 German, 8 English, 1 French.

TABLE OF CONTENTS:

Basic Problems of Accuracy (Cont.)	307/1592
-Kovian, V.M., Honored Scientist and Technician of the USSR, Doctor of Technical Sciences, Professor. Method of Analytical Calculation for Determining Tolerances and Allowances in Connection With the Problem of Accuracy Increase in Machine Building	83
-Kerezhov, V.S., Doctor of Technical Sciences, Professor. Rigidity of the Manufacturing System and its Effect on the Accuracy of Mechanical Machining	94
-Reshetov, D.N., Doctor of Technical Sciences, Professor. Influence of Physical-technical Factors on Machining Accuracy in Machine Building	110
-Yakobson, M.O., Doctor of Technical Sciences, Professor. Problems of the Relation Between Dimensional Accuracy and Surface Roughness in Mechanical Machining	132
-Gulvazev, B.B., Doctor of Technical Sciences, Professor, and I. Gornov, Candidate of Technical Sciences. Accuracy Increase in Casting	146

Card 4/8

GULYAYEV B. B.

PHASE I BOOK EXPLOITATION 1216

Soveshchaniye po teorii liteynykh protsessov. 2d, Moscow, 1956

Zatverdevaniye metallov; trudy soveshchaniya... (Solidification of Metals; Transactions of the Second Conference on the Theory of Foundry Processes) Moscow, Mashgiz, 1958. 532 p. 3,500 copies printed.

Sponsoring Agencies: AN SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya; and AN SSSR. Institut metallurgii.

Ed. (Title page): Gulyayev, B.B., Doctor of Technical Sciences, Professor; Ed. (Inside book): Novikov, P.G., Candidate of Technical Sciences; Ed. of Publishing House: Chernysheva, N.P.; Tech. Ed.: Uvarova, A.F.; Managing Ed. for Literature on Heavy Machine Building: Golovin, S.Ya., Engineer.

PURPOSE: This book is intended for a wide circle of engineers, technicians, and scientists working in the fields of general metallurgy, physical metallurgy, and the production of castings.

Card 1/8

Solidification of Metals (Cont.)

1216

COVERAGE: The book is a collection of 29 papers concerned with the determination of fixed patterns of metal solidification and also with the determination of favorable conditions for the production of sound castings. The authors discuss heat phenomena in metallic and sand molds, properties of mold materials, conditions of solidification of castings in shell molds, kinetics of the warming-up of porous bodies (molds), effect of alloy composition on the solidification process, conditions for the development of a zonal structure and of chemical heterogeneity of castings, and other matters of current interest. There are also discussions of the use of model testing and radioactive isotopes for studying solidification. No personalities are mentioned.

TABLE OF CONTENTS:

Preface	3
<u>Gulyayev, B.B.</u> , Doctor of Technical Sciences, Professor. Present State of Investigations of Metal-solidification Processes	5

Card 2/8



1216

Solidification of Metals (Cont.)

I. HEAT-TRANSFER PROCESSES IN THE SOLIDIFICATION OF CASTINGS

Berg, P.P. Principles for Constructing Production Formulas for  
Evaluating Heat Processes in the Casting Mold 33

Girshovich, N.G., Doctor of Technical Sciences, Professor; and  
Yu.A. Mekhendzi, Doctor of Technical Sciences, Professor. 39  
Solidification of Castings

Veynik, A.I., Doctor of Technical Sciences, Professor. Inves-  
tigation of Heat Phenomena in Metallic Molds and Their Effect  
on Solidification Processes 91

Gulyayev, B.B., Doctor of Technical Sciences, Professor; and  
O.N. Magnitskiy, Engineer. Investigation of the Effect of  
Alloy Composition on the Kinetics of the Solidification of  
Castings 108

Skvortsov, A.A., Candidate of Technical Sciences, Docent. On  
the Solution of the Problem of the Solidification of Metals  
Within a Temperature Range 124

Card 3/8

Solidification of Metals (Cont.)	1216
Shapranov, I.A., Candidate of Technical Sciences; E.V. Petrova, Engineer; and S.A. Stepanov, Engineer. Solidification of High-strength Iron Castings	161
Belousov, N.N., Candidate of Technical Sciences. Solidification of Castings of Nonferrous Alloys Under Application of Pressure	176
Lykov, A.V., Doctor of Technical Sciences, Professor. Kinetics of the Warming-up of Solid Bodies	215
Kolacheva, O.V., Engineer. Investigation of The Thermal Conditions of the Solidification of Castings in Shell Molds	231
Yegorenkov, I.P., Candidate of Technical Sciences. Investigation of the Process of Cooling Heavy Iron Castings in the Mold	243
II. PHYSICAL AND CHEMICAL PROCESSES IN METAL SOLIDIFICATION	
Khvorinov, N.I. Solidification and Crystallization of Metal	257

Card 4/8

Solidification of Metals (Cont.)	1216
Fridlyander, I.N., Candidate of Technical Sciences. Investigation of the Effect of the Rate of Solidification on the Structure and Properties of Aluminum Alloys	275
Kamenetskaya, L.S., Candidate of Technical Sciences. The Effect of Addition Agents on the Crystallization of the Steel Ingot	299
Dukhin, A.I., Candidate of Technical Sciences; and V.Ye. Neymark, Candidate of Technical Sciences. On the Problem of Ingot Crystallization	310
Militsyn, K.N., Candidate of Technical Sciences, Docent. General Problems of the Crystallization and Solidification of Castings	314
Chertkov, G.V., Candidate of Technical Sciences. The Effect of the Rate of Cooling of Iron Castings on the Structure and Brittle-Strength Characteristics of Metal	327

Card 5/8

Solidification of Metals (Cont.)

1216

Zigel', O.D., Engineer; L.I. Morozenskiy, Candidate of Technical Sciences; and I.Ya. Granat, Candidate of Technical Sciences. Factors Determining the Development of Extra-axial Chemical and Structural Heterogeneity in Steel Ingots and Castings 338

Tageyev, V.M., Candidate of Technical Sciences; and Yu.D. Smirnov, Engineer. Investigation of the Process of Formation of Extra-axial Heterogeneity in Steel Ingots and Castings 352

III. IMPROVING THE QUALITY OF PRODUCTS BY REGULATING

THE CONDITIONS OF SOLIDIFICATION OF CASTINGS

Postnov, L.M., Engineer; and B.B. Gulyayev, Doctor of Technical Sciences, Professor. Investigation of the Effect of Metal Solidification During the Filling of the Mold on the Quality of Steel Castings 374

Madyanov, A.M., Candidate of Technical Sciences. Control of the Process of Steel Solidification in the Mold in the Production of Heavy Ingots 397

Card 6/8

Solidification of Metals (Cont.)

1216

- Chukhrov, M.V., Candidate of Technical Sciences. Investigation of the Process of Crystallization of Magnesium-alloy Ingots 413
- Rabinovich, B.V., Candidate of Technical Sciences. Experimental Investigation of the Solidification of White-Iron Ingots and the Determination of the Dimensions of Side Risers 428
- Korol'kov, P.M., Candidate of Technical Sciences. Effect of Alloy Composition on Shrinkage Phenomena and Crack Formation in the Solidification of Castings 446
- Neymark, V.Ye., Candidate of Technical Sciences. Obtaining Cast Products by the Vacuum-Crystallization Method 465
- Smirnova, K.N., Engineer. Production of Steel Blanks by Compression During the Crystallization Process 480
- Medvedev, Ya.I., Engineer. Formation of Cold Shuts in Heavy Castings and Calculation of the Metal-pouring Rate 484

Card 7/8

Solidification of Metals (Cont.)	1216
Dubrovskiy, A.M., Engineer. Deformation of Sand Molds During Solidification and Cooling of Steel Castings	496
Arbuzov, B.A., Engineer. Requirements Which Must Be Met by Mold Materials and Ways of Improving the Quality of Light-alloy Castings	512
Resolution of the Conference on the Problem of Metal Solidification at the Institutes of Machine Engineering and Metallurgy of the Academy of Sciences of the USSR	529

AVAILABLE: Library of Congress

GO/nah  
2-24-59

Card 8/8

GULYAYEV, B. B

AUTHOR:

Makel'skiy, M. F.

30-58-4-22/44

TITLE:

Research on Metal Crystallization  
(Issledovaniya po kristallizatsii metallov)  
Conference at the Institute for Machine Engineering  
(Soveshchaniye v Institute mashinovedeniya)

PERIODICAL:

Vestnik Akademii Nauk SSSR, 1958, Nr 4  
pp. 104-105 (USSR)

ABSTRACT:

This conference on metal crystallization took place from January 28 - 31. It was the fourth conference organized by the Commission for Machine-Building Technology of the Institute for Machine Engineering of the AS USSR during the last years. Representatives of the academic and branch institutes, of plants and technical colleges, as well as foreign scientists took part in it. B. B. Gulyayev gave a survey on the present situation of crystallization research and of that of metal properties, as well as on the problems in this field. In the majority of reports besides theoretical research also suggestions for an improvement of the quality of metal casts of steel, cast iron and

Card 1/5

Research on Metal Crystallization  
Conference at the Institute for Machine Engineering

30-58-4-22/44

non-ferrous metals were dealt with. Further reports were:

- 1) N. N. Sirota on a general physical and mathematical theory of the formation and growth of crystals.
- 2) K. P. Bunin on the formation properties of graphite  
Yu. N. Taran separations in eutectic alloys.
- 3) B. Ya. Lyubov on analytical research results of the hardening process.
- 4) A. G. Spasskiy on essential factors exercising an influence on the structure of the cast.
- 5) M. V. Mal'tsev on the direction of crystallization processes.
- 6) O. N. Magnitskiy on the effect of the composition of  
A. A. Demidova the alloy on the crystallization and  
B. B. Gulyayev the properties of casts.
- 7) I. L. Mirkin on the effect of concentration fluctuations on the crystallization of complicated alloys.
- 8) G. F. Balandin on the mathematical theory of cast iron crystallization.

Card 2/5



Research on Metal Crystallization  
Conference at the Institute for Machine Engineering

30-58-4-22/44

- 9) D. S. Kamenetskaya on the results of experiments  
E. P. Rokhmanova on the crystallization kinetics  
Ye. E. Spektor of iron and its alloys.
- 10) I. A. Shapranov on the rules of the development  
E. V. Petrova of the deficiency in carbon of  
cast iron.
- 11) B. S. Mil'man on the part played by the surface  
tension of the degassing process and  
of the desulfurization in cast iron  
crystallization.
- 12) Ya. N. Malinoch on the effect of inner-crystalline  
A. A. Zhukov silicon segregation on the structure  
of cast iron.
- 13) D. Chikl' (DDR) on graphite and cast iron  
crystallization.
- 14) I. V. Sali on research methods for alloy structures.
- 15) N. I. Khvorinov (Czechoslovakia) on the formation  
of crystallization.

Card 3/5

Research on Metal Crystallization  
Conference at the Institute for Machine Engineering

30-58-4-22/44

- 16) G. P. Ivantsov on the conditions of the cooling regime of the block.
- 17) N. N. Guglin on a new method for the determination of mechanical properties of a metal  
A. A. Novikova in the case of a great temperature interval.  
B. B. Gulyayev
- 18) V. Ye. Neymark on the methods and research results on the effect of different transformers on the crust deformation and the hardening velocity of the block.
- 19) V. G. Gruzin on problems of the formation of primary structure in constructional steel.  
P. I. Yamshanov  
N. P. Neverova
- 20) I. I. Goryunov on the modification effect on the structure and on the physical and mechanical properties of high-alloyed steels.

Card 4/5

Research on Metal Crystallization  
Conference at the Institute for Machine Engineering

30-58-4-22/44

- 21) F. F. Khimushkin      on the formation of the  
    F. V. Aksenov        heterogeneity in heat-resistant  
    E. Ya. Rodina        alloys in crystallization and  
                          heat treatment.
- 22) N. L. Pokrovskiy     on the crystallization properties  
    D. Ye. Ovsiyenko    of various non-ferrous metal alloys.
- 23) N. N. Belousov      on research results on the  
    A. A. Dodonov        crystallization and the properties of  
                          non-ferrous metal alloys under  
                          pressure.

Reports were also delivered on the metal crystallization in welding, ultra-sonic treatment a. o. In the final conclusion suggestions for the introduction of a number of methods were accepted and the principal directions of further research in metal crystallization were outlined.

- 1. Metallic crystals--Theory    2. Metallurgy--USSR

Card 5/5

SOV/123-59-15-60468

Translation from: Referativnyy zhurnal. *Mashinostroyeniye*, 1959, Nr 15, p 223 (USSR)

AUTHORS: Postnov, L.M., Gulyayev, B.B.

TITLE: Investigations of the Effect of Metal Solidification During the Mold Filling Process on the Quality of Steel Castings

PERIODICAL: V sb.: *Zatverdevaniye metallov*. Moscow, Mashgiz, 1958, pp 374 - 396

ABSTRACT: Owing to the heating effects of the flow of overheated metal the solidification of castings in the zones (Z) near the gate is taking place more slowly; even the smelting of the solid skin, forming at the beginning, might occur. These Z solidified late might even get isolated from the supply sources (gate systems, heads) and therefore develop into Z of the greatest shrinkage porosity. Investigations were carried out for a quantitative analysis of the mentioned phenomena as applied to plate castings of carbon steel. The rated formulae are derived and the results of the tests for the determination of the duration of the solidification process and the density of the castings in the Z near the gates are stated. Particularly the distribution of the density and  $\sigma_b$  over the length of plates with dimensions of 1,100 · 325 mm and thicknesses of 10, 20, 30,

Card 1/3

SOV/123-59-15-60468

Investigations of the Effect of Metal Solidification During the Mold Filling Process  
on the Quality of Steel Castings

and 50 mm, cast in vertical and horizontal positions, was determined. Besides, in these tests the temperature and speed of casting, the quantity of metal which was poured through the gates (for this the number of gates and the size of the heads were varied) and the relative layout of gate and heads were varied. The density was determined by X-raying and gravimetric analysis of cut-out templets. A decrease in density was always accompanied by a corresponding reduction of  $\sigma_b$ . With horizontal casting the Z of porosity was more extensive than with vertical casting, e.g. for a cast plate of 30 mm thickness the porosity zone started at a distance of 60 - 80 mm from the gate and spread out over the length of the plate up to 200 - 300 mm. The contour of the porosity Z corresponds to the shape of the flow when flowing out under a submerged level (the Z expands in the shape of a fan in direction from the gate). A rise of the temperature of the metal and an increase in its quantity, poured through the gate, leads to a considerable reduction of the density of the casting in the Z near the gate. The effects of the casting speed and the thickness of the casting are slight. Based on the investigations, practical recommendations for avoiding the porosity in steel castings in the Z near the gate are

Card 2/3

SOV/123-59-15-60468

Investigations of the Effect of Metal Solidification During the Mold Filling Process on the Quality of Steel Castings

given: casting in a vertical position, dispersed metal supply, adjustment of the heads above the gates (or at least at no greater distance than 2-3 times wall thickness), casting temperature as low as possible. 22 figures.

O.S.M.

Card 3/3

AUTHOR: Gulyayev, B.B.

SOV/24-58-4-37/39

TITLE: Conference on Crystallisation of Metals (Soveshchaniye po kristallizatsii metallov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 153 - 155 (USSR)

ABSTRACT: This conference was held at the Institut mashinovedeniya AN SSSR (Institute of Mechanical Engineering of the Ac.Sc. USSR) on June 28-31, 1958. About 400 people participated and the participants included specialists in the fields of foundry, metallurgy, crystallography, physics, welding, heat, physical chemistry, mathematical physics and other related subjects. In addition to Soviet participants, foreign visitors included Professor D. Cziki (East Germany) and N.I. Chvorinov (Czechoslovakia). This conference on crystallisation of metals was the fourth conference relating to the general problem of the theory of foundry processes. The first, in 1950, was devoted to the hydrodynamics of molten metals; the second, 1956, was devoted to the solidification of metals; the third, in 1957, dealt with settling processes in castings. The 1958 conference

Card1/10

SOV/24-58-4-37/39

Conference on Crystallisation of Metal

completed the cycle of problems relating to the production of metal castings. 48 papers were read, which were extensively discussed. In his opening address Academician V.I. Dikushin characterised the state of the problems of crystallisation of metals, its importance from the point of view of foundry process and metallurgy; he outlined the tasks of the conference and also gave a general review of the results of scientific investigations and production experience in the field of study of crystallisation of metals and improvement in the quality of castings from cast iron, steel and non-ferrous metals.

In his paper "Present State and Problems of Studying Crystallisation of Metals", B.B. Gulyayev analysed the existing use and processes of formation of the structure of castings and described concrete results of his investigations of the influence of speed of cooling and of inoculation on the structure and properties of cast metals.

Card 2/10



Conference on Crystallisation of Metals

SOV/24-58-4-37/39

General Problems of Crystallisation of Metals

Member of the Ac.Sc. Belorussian SSR N.N. Sirota, in his paper "On the Mechanism of the Process of Crystallisation", proposed a general physico-mathematical theory on germination and the growth of crystals and described its application to problems of crystallisation of metals.

Corresponding Member of the Ac.Sc. Ukrainian SSR K.P. Bunin and Yu.N. Taran, in their paper "Eutectic Crystallisation of Grey Irons", considered the features of formation of graphite separations in eutectic alloys from the point of view of the general theory of crystallisation of iron.

B.Ya. Lyubov, in his paper "Calculation of the Speed of Solidification of Metals in Large Volumes", proposed a synthesis of the molecular-kinetic and of the thermal theories of crystallisation of metallic castings.

A.G. Spasskiy, in the paper "Fundamental Factors Influencing the Structure of Castings" and M.V. Mal'tsev in the paper "Methods of Improving the Quality of Cast Metal", described results of their investigations of crystallisation

Card3/10

Conference on Crystallisation of Metals

SOV/24-58-4-37/39

of castings from various alloys and considered methods of controlling such processes.

I.L. Mirkin dealt with the influence of fluctuations in the concentration on the formation of crystallisation nuclei and formation of crystals in complex alloys.

G.P. Ivantsov gave a review of the present concepts on germination and the growth of crystals. O.N. Magnitskiy, A.A. Demidova and B.B. Gulyayev considered the influence of the speed of crystallisation and the composition of the alloys on the quantitative characteristics of the structure and the mechanical properties of castings of the systems iron-carbon and aluminium-silicon. D.S. Kamenetskaya, E.P. Rakhmanova and Ye.Z. Spektor dealt with the results of investigation of the kinetics of crystallisation of iron and its alloys. G.F. Balandin proposed a mathematical theory of formation of the structure of castings and applied it for elucidating the features of crystallisation of iron. Ya.V. Grechnyy dealt with the features of crystallisation of binary alloys of various types.

Card4/10

Conference on Crystallisation of Metals

SOV/24-58-4-37/39

Crystallisation of Cast Iron. I.A. Shapranov and E.V. Petrova, in their paper "Investigation of the Crystallisation of magnesium-inoculated iron", reported on experimental data relating to the conditions of solidification and the structure of castings made of magnesium-inoculated iron; they presented a theory of crystallisation of magnesium-inoculated iron. B.S. Mil'man, in his paper "Investigation of the Process of Formation of Spheroidal Graphite in Iron", considered the influence of various factors and characteristics of the metal on the formation of graphite inclusions. Professor D. Cziki (East Germany) presented a paper on crystallisation of graphite in cast iron, which was illustrated by extensive metallographical information. Ya.N. Malinochka and A. Zhukov dealt with the problem of intracrystalline liquation of silicon and its influence on the structural diagram of cast iron. I.I. Khoroshev and I.Ye. Lev dealt with the mechanism of germination of centres of crystallisation of graphite in castings made of white iron and the influence of the speed of crystallisation on the distribution of alloying

Card5/10

Conference on Crystallisation of Metals

SOV/24--58--4--37/39

elements between the individual phases of iron-carbon alloys. I.V. Salli proposed a method of hardening of alloys from the liquid state using an extremely high speed of cooling; investigations relating to this method enabled conservation of saturated solutions of carbon in iron which correspond to the liquid state. E. Ya. Khrapkovskiy dealt with the investigation of crystallisation, the primary structure and the properties of quasi-eutectic grey iron.

Crystallisation of Steel and Alloys with Special Properties.

The following papers were read:

V.I. Lapitskiy, N.I. Stupar, K.P. Rudachev, V.L. Olekseyenko, A.I. Marinov - "Certain Methods of Reducing Non-uniformities of Large Castings (up to 20 t) made of Rimming Steel"; V.K. Novitskiy, A.B. Mikul'chin and V.V. Blinov - "Influence of Internal Crystallisers on the Structure and Properties of Steel Ingots"; N.I. Chvorimov (Czechoslovakia) - "On the Crystallisation of Steel"; A.P. Pronov - "Crystallisation of Continuously Cast Ingot and Influence on it of the Properties of Liquid Steel"; L.I. Morozenskiy and O.D. Zigel -

Card6/10

Conference on Crystallisation of Metals

SOV/24-58-4-37/39

"Influence of Movement of the Metal in the Liquid Core on the Crystallisation of Steel Ingots and Castings"; N.N. Guglin, A.A. Novikova and B.B. Gulyayev - "Crystallisation and Mechanical Properties of Steels at Elevated Temperatures"; V.Ye. Neymark - "Influence of Inoculation on the Deformation of the Crust and the Speed of Solidification of Ingots"; G.P. Ivantsov - "Thermal Stresses and Deformation in the Crust of a Crystallising Ingot"; V.G. Gruzin and P.I. Yamshakov, N.P. Neyerova dealt with problems of formation of the primary structure of structural steel and the influence on it of the temperature of pouring. The features of crystallisation of castings made of alloys with special properties and of austenitic steels were dealt with in the following papers: I.I. Goryunov - "Influence of Inoculation on the Structure and on the Physico-mechanical Properties of High-alloy Steels"; F.F. Khimushin, F.V. Aksenov, N.F. Lashko and E.Ya. Rodina - "Occurrence of Non-uniformities in High-temperature alloys During Crystallisation and Heat Treatment" and "Experimental Investigation of the Process

Card7/10

Conference on Crystallisation of Metals SOV/24-58-4-37/39

of Crystallisation of Cast Blades Made of Refractory Alloys"; A.M. Yuferov considered the process of recrystallisation of steel.

Crystallisation of Non-ferrous Metals. N.N. Belousov and A.A. Dodonov - in their paper "Investigation of the Crystallisation and the Properties of Non-ferrous Metals Under Conditions of Applying Pressure", presented results of experiments on producing castings which crystallise under pressure from all sides and piston pressure within a wide range of specific loads. The results of the investigation provide material for improving existing methods of applying pressure to influence the crystallisation of alloys. The influence of the conditions of crystallisation on the casting and mechanical properties of aluminium alloys, at normal and at elevated temperatures, were discussed in the papers of I.F. Kolobnev and A.Ye. Semenov. The results of investigations of the conditions of crystallisation of aluminium alloys during continuous casting were presented in the paper of Ye.D. Zakharov. N.L. Pokrovskiy and D.Ye. Ovsienko

Card8/10

dealt with the features of crystallisation of various

Conference on Crystallisation of Metals

SOV/24-58-4-37/39

non-ferrous alloys and the physico-chemical phenomena accompanying this process.

Crystallisation of Metals in the Welding Bath. The following papers were read: B.A. Movchan - "Investigation of the Features of the Microscopic Chemical Non-uniformity in Alloys"; G.L. Petrov - "Crystallisation and Chemical Non-uniformity in Weld Joints"; M.Kh. Shorshorev and V.S. Sedykh - "Influence of Non-uniformities of Crystallisation in the Weld Bath on the Formation of Hot Cracks".

Crystallisation of Metals in an Ultrasonics Field.

The following papers were read: Member of the Ac.Sc.  
Belorussian SSR N.N. Sirota, Ye.L. Lekhtblad and E.M. Smolyarenko - "Crystallisation of Metals and Alloys in an Ultrasonics Field"; I.I. Teumin - "Influence of Elastic Oscillations on the Processes of Crystallisation and the technological properties of Alloys"; L.L. Silin and A.A. Yerokhin - "Effect of Ultrasonics on Crystallising Metal in the Weld Bath".

Card9/10

SOV/24-58-4-37/39

Conference on Crystallisation of Metals

In the resolutions, the results were evaluated in the field of crystallisation of metals, technological measures were recommended for introduction and the trends of further study of the problem were outlined. The Institute of Mechanical Engineering of the Ac.Sc.USSR was also entrusted with the organisation in 1959 of the fifth conference on the theory of castings processes, which should deal with problems of accuracy of castings.

Card 10/10



GULYAYEV, B.B., doktor tekhn.nauk, prof.; POPOV, N.V., inzh.

Investigating the state of sulfur in liquid steel. Izv. vys. ucheb.  
zav.; chern.met. no.5:29-32 My '58. (MIRA 11:7)

1.Leningradskiy nauchno-issledovatel'skiy institut.  
(Desulfuration) (Steel--Metallurgy)

GULYAYEV, B.B.

Conditions of the founding industry in the German Federal Republic.  
Biul.tekh.-ekon.inform. no.9:85-88 '58. (MIRA 11:10)  
(Germany, West--Founding)

GULYAYEV, B.B.

Precision casting abroad. [ Izd. ] LONITOMASH 45:5-17 '58.

(MIRA 11:6)

(Founding)

GULYAYEV, B B

А.И.Понеев	Влияние отдельных элементов на свойства стали в процессе кристаллизации
О.Д.Мельников	
Л.М.Белкин	
В.С.Григорьев	

М.А.Давыдов	Влияние условий роста на структуру мелкозернистой стали.
В.Д.Заварзин	
Э.И.Тетин	

С.Я.Соболев	Закалкаемость и неоднородность структуры сталей при различных конфигурациях.
Е.А.Козлов	
В.А.Мельников	

Е.А.Козлов	Температурные условия закаливания крупнозернистой стали.
С.Я.Соболев	

Ю.П.Соловьев	Влияние неоднородности дофанта на свойства стали.
В.А.Лавренко	
В.В.Гурьев	

А.М.Прохоров	Измерения релаксации стали в заданном диапазоне температур.
В.П.Белкин	
В.Н.Добинин	100-150 мм.
В.В.Соловьев	

Н.М.Гурьев	Исследование влияния неоднородности структуры на свойства сталей.
А.А.Маслов	
А.А.Новиков	800-150 мм.
В.В.Гурьев	

report submitted for the 5th Physical Chemical Conference on Steel Production, Moscow— 30 Jun 1959.