PASHKOV, N. V.

GAS PRESSURE WELDING OF RAILWAY WAGON PARTS. T. A. VLADIMIRSKII, K. V. Selivanov, A. K. Shvylpov, and N. V. Pashkov. (Avtol Delo, 1949 No. 12, pp/16-19) (In Russian)
It has been found advantageous in the repair of railway wagon parts to replace the forge and flash-welding processes previously used by gas pressure-welding, and examples are given of the successful use of this method. SK

All-Union Sci Res Instit Railroad Transportation,
Inst. Sci Res. Instit., Min of Communications

PASHKOV N.V.

KRAYCHIK, M.M.; PASHKOV, N.V.

Some problems of the effect of cold hardening upon the strength of welded joints. Avtom.svar.7 no.6(39):19-26 N-D '54. (MLRA 8:2)

1. TSNII MPS
(Welding)(Metals--Hardening)

PASHKOV, N. V.

Metals

2

Tensile Tests on the Metal of Boilers and Vessels with the Aid of Ring Test-Pieces. T. A. Vladimirskii and N. V. Pashkov, (Zavodskaya Laboratoriya, 1956, 22, (11), 1371–1374). [In Russian]. The use of small ring-type test-pieces for tensile tests on sheet metal, particularly steels with 0·17–0·33% C is described. Two sizes of ring were used, 20 and 34 mm in diameter and 8 and 18 mm wide, respectively. The small amount of metal required facilitated repair after cutting out the test-piece from boilers, vessels, welded joints in pipes, etc. Results obtained with both ring sizes and with standard flat test-pieces are compared and subjected to statistical analysis. This shows a strong correlation between the ring and flat test-piece results, regression lines for the relationship being calculated.—S. K.

All-Union Inst. Railroad Transport

AID P - 4819

Subject : USSR/Engineering

Card 1/1 Pub. 107-a - 5/13

Authors : Kraychik, M. M. and N. V. Pashkov

Title : Investigation of the weldability of the 25L steel

Periodical : Svar. proizv., 3, 17-20, Mr 1956

Abstract : The authors investigated the weldability of 25L steel, which is widely used in parts for rolling stock and is repaired by welding whenever possible. The UONI-13/55 electrode used in welding procedure was found to provide the needed strength and cold brittleness of this steel. Four tables, 5 graphs and 1 photo, several GOST standards and 1 Russian (1951) reference.

Institution : All-Union Central Scientific Research Institute of the Ministry of Railways.

Submitted : No date

PASHKOV, N.V.; KHOKHLOV, V.D.

The APU-DKP automatic weft-straightening machine. Biul. tekh.-ekon. inform. no.1:47-49 '57. (MIRA 11:4)
(Textile machinery)

[illegible]CHEYEV, I.A., kand. tekhn. nauk; [illegible], V.I., kand. tekhn. nauk; [illegible], inzh.; [illegible], inzh.

Fatigue strength of welded joints in aluminum alloy. Svar. proizv. no.[illegible] [illegible] (MIRA [illegible])

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta Ministerstva putey soobshcheniya.

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001239

ACCESSION NR: AT4019090 S/2917/63/000/260/0045/0060

AUTHOR: Moiseyev, I. A. (Candidate of technical sciences); Pashkov, N. V. (Engineer)

TITLE: The use of welding for rolling stock made of aluminum alloys

SOURCE: Moscow. Vsesoyuzny*y nauchno-issledovatel'skiy institut zheleznodorozchnogo transporta. Trudy*, no. 260, 1963. Novoye v svarke na zheleznodorozhnom transporte (New welding methods in railroad transportation), 45-60

TOPIC TAGS: welding, arc welding, hand welding, aluminum, aluminum alloy, aluminum welding, steel 3, railroad, rolling stock

ABSTRACT: Aluminum and aluminum alloys are presently being used for many different purposes, including the manufacture of railway cars, but the technological problems of aluminum welding have not yet been sufficiently studied. In the present paper, the authors discuss the results of studies on the fatigue strength and impact strength of various types of welds of both aluminum alloy AMg6 and steel 3, and attempt to apply these results to the technology of aluminum railway car construction and repair. The results show that the fatigue strength of an argon arc weld of Al is 13.5% lower than that of a mechanical weld; furthermore, the strength of a butt weld is only 70% of that of the unwelded metal, but is twice the strength of an overlap weld (33% of that of the unwelded metal). The fatigue

Card 1/2

ACCESSION NR: AT4019090

strength may be improved by cold working of the surface with a pneumatic hammer. With respect to impact strength, the weld is 50-66% as strong as the unwelded metal, and surface hardening is ineffective. Both argon are welding and hand welding can be used for the repair of railway cars. However, since the static strength and fatigue strength are both lower in seams welded with OZA-3 electrodes than in arc-welded seams, the more significant parts of aluminum railway cars should be repaired only by the argon arc process, reserving hand welding with OZA-3 electrodes for the secondary parts. Furthermore, the new techniques should initially be used only at selected places by specially trained welders, and all seams should be checked ultrasonically, for example with a UZD-59 defectoscope. "The OZA-3 electrodes are produced by the Opy*tny*y svarochny*y zavod (Experimental Welding Plant)." Orig. art. has: 8 figures and 6 tables.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta (All-Union Scientific Research Institute of Railway Transport)

SUBMITTED 00	DATE ACQ: 27Mar64	ENCL: 00
SUB CODE: MM	NO REF SOV: 005	OTHER: 000

Card 2/3

ACCESSION NR: AP4040702 S/0135/64/000/006/0025/0028

AUTHORS: Moiseyev, I. A. (Candidate of technical sciences); Sinyavskiy, V. S. (Candidate of technical sciences); Usachev, V. I. (Engineer); Pashkov, U. V. (Engineer)

TITLE: On the fatigue strength of aluminum alloy welds

SOURCE: Svarochnoye proizvodstvo, no. 6, (630), 1964, 25-28

TOPIC TAGS: welding, aluminum alloy AMg6, aluminum alloy AMg61, aluminum alloy AD33, filler metal AK, fatigue strength, impact strength, argon, arc welding, electrode, butt welding, pin support

ABSTRACT: The strength of aluminum alloy welds in flat and three-dimensional structures was studied to determine the effect of the seam form, spacing, and the technique of weld finishing on the durability of joints. All joints were welded by the same technique (argon arc welding with fusible electrodes). Flat samples consisted of: 1) plated and non-plated metals, 2) butt welds with and without final mechanical finish, 3) samples with central collars or bosses of rectangular section, made of solid metal (no welding) and samples with welded collars and bosses (complete and incomplete penetration). The joints were simulated in three-dimensional models. All samples were made of three aluminum alloys: AMg6, AMg61

Card 1/2

ACCESSION NR: AP4040702

and AD-33; filler metal used for the first two was of the same composition while the AK electrode was used for AD-33. The results showed that the fatigue strength of unplated specimens was 13-15% higher than of the plated ones. Unwelded AMg6 and AMg61 specimens had equal fatigue strengths, which were 23% higher than that of AD-33. Finish milling of butt welds produced a 16% increase in strength, while pneumatic hammering raised the fatigue strength almost to the level of alloy AMg6. Because the AK electrode strength is lower than that of the AD-33, the weld strength is 23% lower than that of the original metal. In the composite structures the density and intersections of seams had a weakening effect on the welds. Surface hardening of the joint and the adjacent metal area considerably increased the strength. Engineer G. S. Sary*cheva participated in this work. Orig. art. has: 2 tables and 5 figures.

ASSOCIATION: TsNII MPS

SUBMITTED: 00 ENCL: 00

SUB CODE: MM NO REF SOV: 009 OTHER: 000

Card 2/2

MOISEYEV, I.A., kand.tekhn.nauk; PASHKOV, N.V., inzh.

Use of welding for the rolling stock made from aluminum alloys.
Trudy TSNII MPS no.260:45-60 '63. (MIRA 16:11)

KRAYCHIK, M.M., kand.tekhn.nauk; PASHKOV, N.V., tekhnik

Evaluating the tendency of structural steel toward brittle failure by its reaction to burns by the electrode. Svar. proizv. no.8:6-9 Ag '60. (MIRA 13:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zheleznodorozhnogo transporta Ministerstva putey soobshcheniya.
(Steel, Structural--Brittleness)
(Electric welding)

S/135/60/000/008/002/010
A006/A002

AUTHORS: Kraychik, Candidate of Technical Sciences, Pashkov, N.V., Technician

TITLE: The Estimation of the Proneness to Brittle Failure of Structural Steel From Its Reaction to Electrode Burnings

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 8, pp. 6-9

TEXT: It is practically impossible to prevent welded structures from accidental electrode burnings; the estimation of the proneness of steel to burnings must be considered as one of the characteristics in the weldability of steel. A method was developed to estimate the sensitivity of steel to electrode burnings, determined from the critical temperature of brittleness which was established by a series of impact tests on specimens of 12 x 8 x 55 mm with a notch in the form of an electrode burning. The burning was produced by contacting the steel surface rapidly with an uncoated ordinary steel electrode of 3 mm in diameter (100 amp d-c of reverse polarity). The burning results of tests carried out with burnt and standard notched specimens are given in Table 2. The tests with standard notched specimens were made by E.S. Volokhvyanskaya, Candidate of Technical Sciences. It was established that electrode burnings may be successfully used for evaluating

Card 1/3

S/135/60/000/008/002/010
A006/A002

The Estimation of the Proneness to Brittle Failure of Structural Steel From Its Reaction to Electrode Burnings

the proneness to brittleness of steels having very thin surface-strengtheded layers (formed by vibro-hardfacing, cold hardening and other forms of surface treatment) for which the existing method of applying notches is unsuitable. The sensitivity to burning of "10ГН" (10KhGN), "09Г2" (09G2) and "16Г.3" (MSt.3) steel was low (after appropriate heat treatment); "14Г2" (14G2) and all the investigated MSt.3 melts which were not heat treated, were highly sensitive to electrode burning. The critical temperature of brittleness obtained for notched and burnt specimens was equal. To reveal the causes of this similar effect, metallographic investigations were made. Data obtained permit the hypothesis that the burning produces on the metal surface a zone of reduced ductility down to a depth of 0.7 mm which is equal for all the steels investigated and corresponds to a standard notch by its effect on the critical temperature of brittleness. The properties of this notch do practically not vary within the micro-hardness limits obtained on the microsections of various steels. The notch sensitivity of these steels is determined by the properties of the metal that was not affected by burning. It is also possible that the roughness of the macrorelief of the burning intensifies the notch effect. The equal value of the critical temperature of

Card 2/3

S/135/60/000/008/002/010
A006/A002

The Estimation of the Proneness to Brittle Failure of Structural Steel From Its Reaction to Electrode Burnings

brittleness for burnt and notched specimens is insofar important, as many scientists consider that the presence of electrode burnings in low carbon steel does not present any danger, while it is beyond any doubt that the presence of notches as stress concentrators is inadmissible in the structures. However, the similar value obtained can not be applied to all structural steels until more data for other steel grades have been gathered. In the meantime the sensitivity of steel to electrode burnings can be only determined from results obtained by tests with burnt specimens. It is recommended to eliminate the harmful effect of burnings by grinding the spot to a depth of not less than 0.7 mm. There are 3 tables, 5 figures and 4 references: 3 Soviet and 1 English.

ASSOCIATION: TsNII MPS

Card 3/3

KRAYCHIK, M.M., kand. tekhn. nauk; PASHKOV, N.V., tekhnik

Methods of determining the resilience and cold brittleness of manually welded and semiautomatically welded joints. Svar.proizv. no.11:7-10 N '58. (MIRA 11:11)

1. Vsesoyuznyy TSentral'nyy nauchno-issledovatel'skiy institut Ministerstva putey soobshcheniya.
(Welding--Testing)

AUTHORS: **Kraychik**, M.M., Candidate of Technical Sciences and Pashkov, N.V., Technician

TITLE: Methods of Determining Toughness and Cold Brittleness of Weld Joints in Manual and Semi-Automatic Welding (O metodike opredeleniya udarnoy vyazkosti i khladnolomkosti shvov, vypolnennykh ruchnoy i poluavtomaticheskoy svarkoy)

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 11, pp 7-10 (USSR)

ABSTRACT: Tests on the toughness and cold-brittleness of multi-layer welded seams were carried out with specimens having a notch in the lowest layer, which was not affected by thermal treatment. It was stated that the toughness and cold-brittleness of the weld joint depend on the location of the notch, i.e. whether this notch is situated in the lowest layer, which was not affected by heat, or in a layer affected by heat. This lowest layer serves to determine cold-brittleness of the weld joint. Specimens with a horizontal or vertical notch have similar toughness and cold-brittleness. It is recommended to use specimens with vertical notches for toughness tests of manually or semi-automatically welded joints. Fracture tests

Card 1/2

Methods of Determining Toughness and Cold Brittleness of Weld Joints in Manual and Semi-Automatic Welding

of specimens reveal the thickness of the layer, unaffected by heat, by its larger grain size.
There are 3 tables, 1 graph, 1 diagram, 1 photo and 3 Soviet references.

ASSOCIATION: TsNII MPS

1. Welded joints—Properties 2. Welded joints—Test results

Card 2/2

BELYAYEV, Leonid Mikhaylovich; GORSKIY, L.A., inzh., retsenzent; PASHKOV, N.Ye., inzh., retsenzent; OSMINKIN, Ya.M., inzh., nauchn. red.; PENOVA, Ye.M., red.; KRYAKOVA, D.M., tekhn.red.

[Safety measures in knotting and splicing operations in shipbuilding] Tekhnika bezopasnosti pri takelazhnykh rabotakh v sudostroenii. Leningrad, Sudpromgiz, 1963. 61 p. (MIRA 16:12)

(Shipbuilding—Rigging) (Knots and splices)

YUSHTIN, Yevgeniy Ivanovich; OSMINKIN, Ya.M., inzh., retsenzent;
PASHKOV, N.Ye., inzh., retsenzent; PENOVA, Ye.M., red.;
KOROVENKO, Yu.N., tekhn.red.

[What a crane operator should know about safety engineering]
Chto nuzhno znat' kranovshchiku o tekhnike bezopasnosti.
Leningrad, Sudpromgiz, 1963. 29 p. (MIRA 16:6)
(Cranes, derricks, etc.—Safety measures)

PASHKOV, N.

CHERNAKOV, Fedor Andreyevich; BOGDANOV, Fedor Andreyevich; PASHKOV, N.Ye., otvetstvennyy red.; KAZAROV, Yu.S., red.; TSAL, R.K., tekhn.red.

[Argon-arc welding and its uses] Argono-dugovaia svarka i ee primenenie. Leningrad, Gos. soiuznoe izd-vo sudostroit. promyshl., 1958. 219 p. (MIRA 11:5)
(Electric welding) (Protective atmospheres)

PASHKOV, N.Ye., inzh.

Improve crane operations at the building sites of the Main Administration for Construction in Leningrad. Bezop.truda v prom. 2 no.3:18-19 Mr '58. (MIRA 11:3)

1. Upravleniye Severo-Zapadnogo okruga Gosgortekhnadzora SSSR.
(Leningrad--Cranes, derricks, etc.)

STOIANOV, Ves., inzh.; PASHOV, P., inzh; ATANASOV, B., inzh.; IANAKIEV, G., kand. na tekhn. nauki inzh.; SUIKOV, B., inzh.

Rational systems in mining large copper-poor ore deposits in the Elshitsa Mine, Panagyurski Mini State Mining Enterprise. Min delo 18 no.8:13-16 '63. [illegible]

1. Miproruda (for Stoianov, Pashov, Atanasov).
2. Minno-geolozhki institut (for Ianakiev).
3. DMP "Panagiurski m ni" (for S'ikov).

BELETSKIY, A.F., inzh.; PASHKOV, P.D., inzh.

Reinforced concrete construction elements of multirope hoisting units. Shakht. stroi. 4 no.4:12-15 Ap '60. (MIRA 13:11)

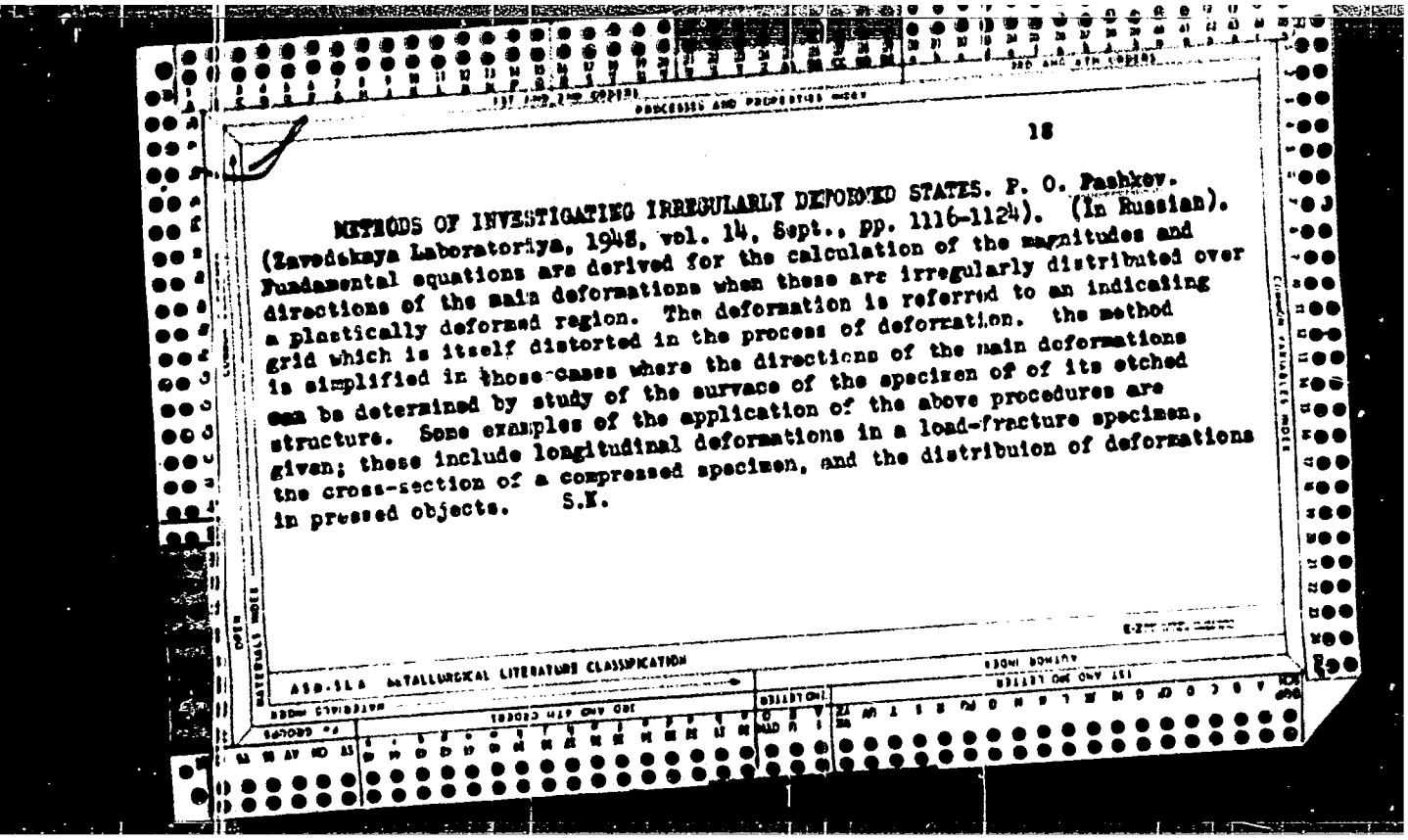
1. Khar'kovskoye otdeleniye Gosudarstvennogo proyektnogo instituta Promstroyproyekt.
(Mine hoisting)

PAS[illegible]V, [illegible].

Pash[illegible], [illegible] and [illegible], [illegible] - "[illegible]," [illegible].-[illegible].
a metal [illegible]
in-ta ([illegible], [illegible] SSSR, [illegible]. 6, [illegible], [illegible]. 1[illegible]-1[illegible].

SO: [illegible]-2[illegible], 16 June 5[illegible], ([illegible] 'Zh[illegible]', No. 5, [illegible]).

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R001239[illegible]



18

METHODS OF INVESTIGATING IRREGULARLY DEFORMED STATES. P. O. Pashkov. (Zavodskaya Laboratoriya, 1948, vol. 14, Sept., pp. 1116-1124). (In Russian). Fundamental equations are derived for the calculation of the magnitudes and directions of the main deformations when these are irregularly distributed over a plastically deformed region. The deformation is referred to an indicating grid which is itself distorted in the process of deformation. the method is simplified in those cases where the directions of the main deformations can be determined by study of the surface of the specimen of of its etched structure. Some examples of the application of the above procedures are given; these include longitudinal deformations in a load-fracture specimen, the cross-section of a compressed specimen, and the distribuion of deformations in pressed objects. S.K.

PASHKOV, P. O.

Mbr., Central Sci. Res. Inst. Min. Shipbuilding Industry.

-c1948-.

"The Theory of Actual Deformation," Zavod. Lab., 14, No. 2, 194[illegible];

"Method for Studying Unequal Deformed States," ibid., No. 9, 1948;

"Resistance to Deformation in a Plastic Stream of Polycrystallized Metals," Zhur. Tekh. Fiz., 19, No. 2, 1949;

"Periodicity in Deformation of Coarse-Grained Steel under Tension and Compression," ibid., No. 3, 1949;

"Influence of Cold Hardening with Tension upon Plasticity in a Notch under Bending Force," ibid., No. 7, 1949.

PASHKOV, P. O.

PA 40/49T61

USSR/Metals Feb 49
Strength - Testing
Deformation

"Resistance to Deformation in a Plastic Stream of Polycrystallized Metals," P. O. Pashkov, TsNII, MSP, 19 3/4 pp

"Zhur Tekh Fiz" Vol XIX, No 2

Examines possibility of formulating a single criterion of the strength of polycrystalline metals during considerable plastic deformation on the basis of neglecting physical toughening and taking account of toughening of form.

[redacted] 40/49T61

USSR/Metals (Contd) Feb 49

Presents data confirming admissibility of criterion developed. Obtains results applicable to estimating strength of materials under complex stresses.

[redacted] 40/49T61

PA 38/49T92

PASHKOV, P. O.

Mar 49

USSR/Metals
Steel
Deformation

"Periodicity in Deformation of Coarse-Grained Steel Under Tension and Compression," P. O. Pashkov, Cent Sci Res Inst, Min of Shipbldg Ind, 8 pp

"Zhur Tekh Fiz" Vol XIX, No 3

Established heterogeneity of plastic flow in separate crystals of sample, and presence of periodic distribution of deformations along the axes of the body by investigating microdeformations on the surface and in the volume of coarse-grained soft and medium steels. Submitted 25 Nov 48.

38/49T92

USSR/Metals Jul 49
Cold Hardening
Notching

"Influence of Cold Hardening With Tension Upon Plasticity in a Notch Under Bending Force," P. O. Pashkov, M. D. Chernysheva, Cen Sci Res Inst, Min of Shipbldg Ind, 9 pp

"Zhur Tekh Fiz" Vol XIX, No 7

Study showed that cold hardening with tension changes deformed state markedly at time of rupture on surface of notch. Tables give influence of preliminary cold hardening by tension on distribution

[redacted] 51/49T39

USSR/Metals (Contd) Jul 49

of true deformations on surface of notch under bending test, additiveness of deformations under cold hardening and under bending of cold-hardened specimens with notches, and strength and bending work for preliminarily cold-hardened notched specimens. Submitted 26 Jun 48.

[redacted] 51/49T39

PASHKOV, P. O.

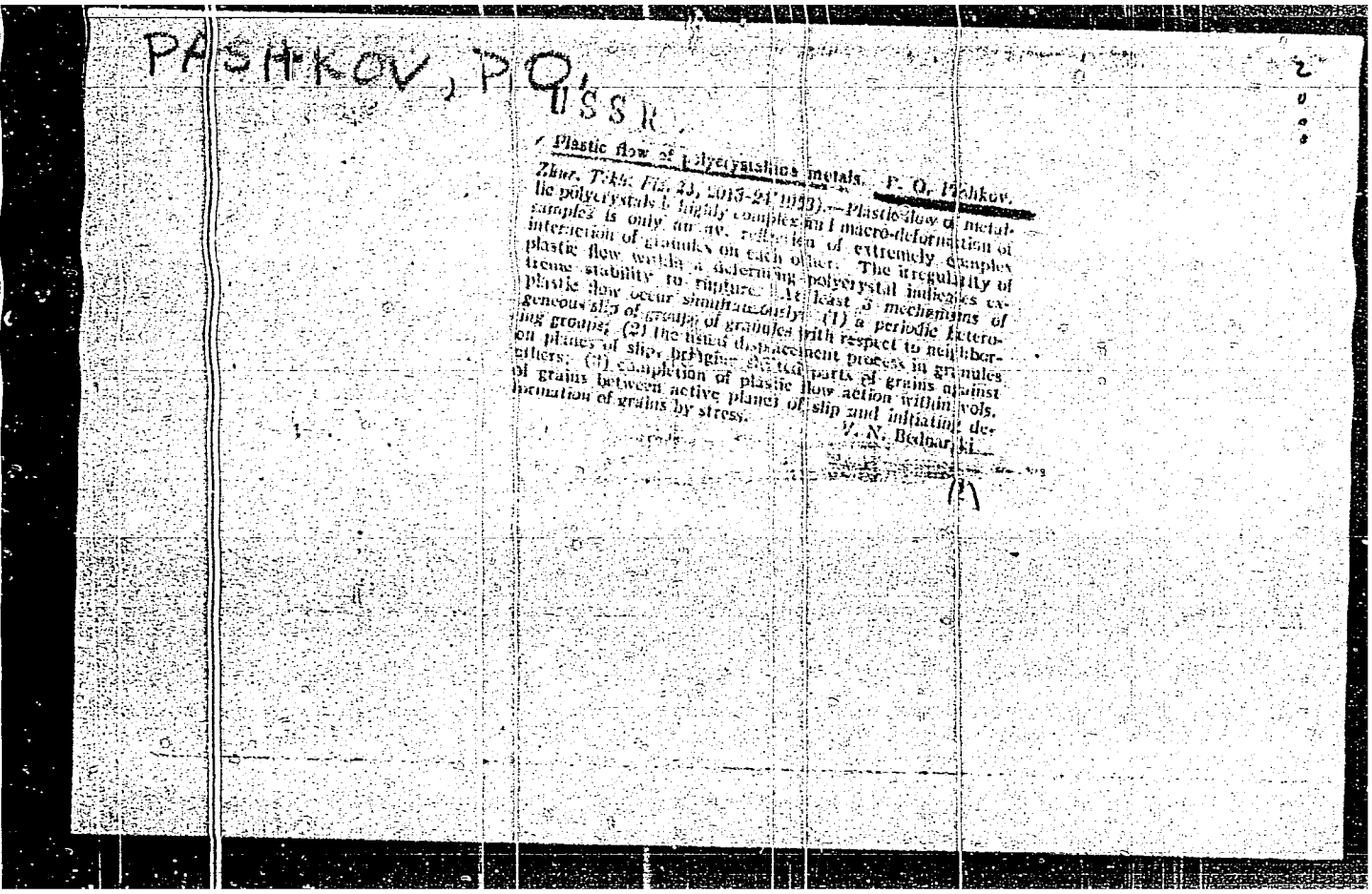
PASHKOV, P. O.

Rastiazhenie i razryv metallov [Tension and cracking of metals]. Leningrad, Sudpromgiz, 1952. 15 p.

SO: Monthly List of Russian Accessions, Vol 6 No 6 September 1953

P. O. PASHKOV

The size of austenite grains and the stability of steel with sorbite and martensite structures. P. O. Pashkov and V. A. Bratukhin. *Zhur. Tekh. Fiz.* 2[illegible] — The distribution of shear lines in deformed steel depends on the size of the austenite grains. The strengths of the coarse- and fine-grained steels are, however, quite similar. The tendency toward brittleness increases sharply, while toughness decreases with increased grain size of austenite. Since the initial grain size dets. the conditions of subsequent tempering, the properties of hardened steel are dependent to a significant degree on the grain size of the steel prior to heat-treatment. C. H. [illegible]



PASHKOV, P O
USSR

Plastic flow of polycrystalline metals. P. O. Pashkov.
Zhur. Tekh. Fiz. 23, 2013-21 (1953).—Plastic flow of metallic polycrystals is highly complex. In macro-deformation of samples is only an ave. reflection of extremely complex interaction of granules on each other. The irregularity of plastic flow within a determining polycrystal indicates extreme stability to rupture. At least 3 mechanisms of plastic flow occur simultaneously: (1) a periodic heterogeneous slip of groups of granules with respect to neighboring groups; (2) the usual displacement process in granules on planes of slip, bringing about parts of grains against others; (3) completion of plastic flow action within vols. of grains between active planes of slip and initiating deformation of grains by stress.
V. N. Bednarski

PASHKOV, P. O.

USSR/Physics - Metals, Strength FD 365

Card 1/1

Author : Pashkov, P. O.

Title : On the strength of the two-phase metals consisting of hard and soft grains

Periodical : Zhur. tekh. fiz. 24, 433-444, Mar 1954

Abstract : Stating that there are no physically substantiated concepts of strength of two-phase metals with grains of various hardness, attempts development and experimental corroboration of such concepts. Deals with three major subjects as follows: resistance of coarse-grained two-phase structures to small deformations; plastic deformation and failure of ferritic-martensitic steel; and deformation resistance of fine-grained two-phase structures. Five references, all USSR; 1 since 1936, others 1950-1952. Photomicrographs, tables, diagrams.

Institution :

Submitted : October 17, 1953

USSR/Physics - Testing of metals FD-3124

Card 1/1 Pub. 153 - 23/24

Author : Pashkov, P. O.

Title : Letter to the editor. Concerning N. N. Davidenkov's article "Nature of the neck during a stretching of specimens"

Periodical : Zhur. tekh fiz., 25, No 6 (June), 1955, 1160-1161

Abstract : The author considers the problem of the nature of the formation of the neck (necking) and N. N. Davidenkov's criticism of the author's formal conclusions concerning the possibility of disregarding of so called physical strengthening after the deformation becomes uniform.

Institution :

Submitted : February 1, 1955

PASHKOV, P.O.; BRATUKHINA, V.A.

Determining the cold brittleness tendency of structural ferrite steel based on tension tests of flat specimens. Fiz.met.i metalloved. 3 no.1:162-171 '56. (MLRA 9:11)
(Steel, Structural--Testing)

PASHKOV, P. O.

26 10

4E2c

Yield strength and cold brittleness of metals. P. O. Pashkov. *Fiz. Metal. i Metalloved., Akad. Nauk S.S.S.R.* [illegible] (1956); *C.A.* 50, [illegible]. — It has been proposed that
a criterion for cold brittleness of a metal or alloy is the ratio
of yield strengths at liquid-N temp. and at room temp. P.
believes a better criterion is the temp. dependence of yield
strength itself. To show this the yield strength (in kg./sq.
mm.) is plotted against V/T^* (from 0 to 0.016) for data on
steels and for various alloys. The inclination of the
straight lines obtained changes only slightly for steels (i.e.
it does not depend greatly on compn.), but the slope is quite
different for metals with different lattices, as is illustrated by
tech. Ti, Zn, Al, brass, bronze (Sn), Armco iron, and an
alloy contg. 93.9% Al, 2.30% Cu, and 1.9% Mg.

V. H. Gottschalk

NB

MT

Cent. Sci. Res. Inst, Min Shipbuilding Industry

137-

Translation from Referativnyy zhurnal, Metallurgiya 1958 Nr 1 p 232 (USSR)

AUTHORS Pashkov, P. O., Bratukhina, V. A

TITLE The Structure and Embrittlement of Steel (Struktura i khrupkost stali)

PERIODICAL V sb., Metallovedeniye. Leningrad, Sudpromgiz, 1957 pp 3-16

ABSTRACT The process of brittle failure (BF) of various steels is examined on the assumption that the tendency to embrittlement is defined chiefly by inhomogeneity in the distribution of the plastic deformation (PD) within the deformed metal. All the observed cases of elevated tendency to brittle failure on the part of steels are related either to the presence therein of structural components having markedly different resistance to PD, or to large granular structure which also induces an increase in uneveness in the PD of the individual grains. Extreme inhomogenity of PD renders the concept of a critical level of BF averaged across the section of the specimen vague. Evaluation of the tendency of steels to BF should be made on the basis of observations of the change in ductility and of the

Card 1/2

The Structure and Embrittlement of Steel

type of fracture of specimens after significant deformations, with a gradual increase in the severity of the test conditions (reduction of temperature, increase in speed, increase in sharpness of the notch). The tendency of steels to BF is capable of complete definition by evaluation of the degree of nonuniformity in the distribution of the PD in different microvolumes. However, the problem of doing this has not yet been solved systematically. All the considerations advanced pertain only to those manifestations of embrittlement of steel as cold-shortness, notch sensitivity, and sensitivity to speed of deformation, but do no apply to hot-shortness, temper brittleness, etc.

Bibliography: 23 references.

1. Steel--Brittleness--Analysis

Ya. P.

Card 2/2

137-58-2-3953

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 240 (USSR)

AUTHOR: Pashkov, P. O.

TITLE: On the Physical Yield Point and the Yield-stress Plateau in Tension (O fizicheskom predele tekuchesti i ploshchadke tekuchesti pri rastyazhenii)

PERIODICAL: V sb.: Metallovedeniye. Leningrad, Sudpromgiz, 1957, pp 162-174

ABSTRACT: A review of experimental data on the formation of yield-stress plateaus (YP) in metals and alloys is presented. The major views held by investigators on the contributing factors in the appearance of YP (effect of grain (G) size, rate of deformation, test temperature, work hardening, nature of crystal lattice, etc.), and on the mechanism of YP formation is presented. It is shown that formation of YP may be explained by the presence of a quasiviscous flow of metal in the boundary layers of the G. The inadequacy of prevailing concepts as to the nature of YP in terms of the precipitation of cementite along the G boundaries and its brittle failure at the onset of deformation is pointed out. Yu. L.

Card 1/1

1. Metals—Tensile properties 2. Alloys—Tensile properties

PASHKOV P.O

18(7) PHASE I BOOK EXPLOITATION SOV/1838

Metallovedeniye; sbornik statey, [vyp.] 2 (Study of Metals; Collection of Articles, [Nr] 2) [Leningrad] Sudpromgiz, 1958. 265 p. 4,000 copies printed.

Resp. Ed.: G.I. Kapyrin, Candidate of Technical Sciences; Ed.: Ye. A. Krugova; Tech. Ed.: K.M. Volchok.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This is the second volume of collected scientific papers dealing with various problems in physical metallurgy, particularly in mechanical metallurgy and metallography. Topics covered include hydrogen embrittlement, intragranular distribution of elements in alloys, effect of tempering on carbon redistribution, use of tritium to investigate certain phenomena in metals, effect of certain alloying elements on temper brittleness and hardenability of steel, strength of notched specimens of brittle steel, effect of strain hardening on the properties of an aluminum alloy, etc. The articles are concerned mainly with various types of steel, though some deal with nonferrous alloys.

Card 1/23

Pashkov, P.O., Doctor of Technical Sciences, Professor, and V.A. Bratukhina, Engineer. On the Principles Operating in the Effect of Grain Size on Brittleness in Ferritic Steel 158

A study was made of the development of certain defects occurring during the process of plastic deformation, which defects may lead to failure. The data obtained were examined from the point of view of the relationship between grain size and tendency to brittleness in ferritic steel. In addition, a study was made of the difference between steel of sorbitic structure, highly tempered after hardening, and tempered steel with a structure of mixed ferrite and pearlite grains (mainly lamellar). The tendency to brittleness of the first group of steel is determined by the length of the ferrite grains, which are more or less plate-shaped, with a high length-to-thickness ratio. In the second group, the tendency to brittleness is determined by the distance between neighboring traces of displacements (slip), which is a measure of the degree of irregularity in the three-dimensional distribution of strain in the steel being deformed.

Card 15/23

stresses causing the fracture of the notched specimen. In the testing of notched specimens it is advisable to use deep notches with a large radius of curvature as well as specimens of large diameter. In this case the actual and theoretical stress concentration factors correspond most closely.

Pashkov, P.O., Doctor of Technical Sciences, Professor. Rapid Plastic Fracture Under the Action of the Energy of Elastic Deformation 186
The author discusses the conditions for the rapid fracture of plastic metals under the action of the energy of elastic deformation stored in the fracture specimen and in the testing machine and reviews current ideas on the subject, which are shown to be inadequate. A typical fracture is indicated, and a critical condition is arrived at which links the magnitude of the energy of elastic deformation necessary for fracture with the properties of the material and the size of its defects (cracks). It is shown that this condition is very similar to A. Griffith's condition for brittle fracture. Regularities in the rapid fracture of plastic metals were experimentally verified. The data obtained support the conclusion that

PAShKOV, P.O., prof., doktor tekhn.nauk; BRATUKHINA, V.A., inzh.

Reasons for the effect of grain size on ferritic steel brittleness.
Metallovedenie 2:158-174 '58. (MIRA 13:9)
(Metal crystals) (Steel--Brittleness)

PASHKOV, P.O., prof., doktor tekhn.nauk

Rapid fracturing under the effect of elastic deformation energy.
Metallovedenie 2:186-197 '58. (MIRA 13:9)
(Metals—Testing) (Deformations (Mechanics))

AUTHORS: Pashkov, P. O. and Bratukhina, V. A. SOV/126-6-1-17/33

TITLE: On the Distribution of Plastic Deformation in Polycrystalline Metals (O raspredelenii plasticheskoy deformatsii v polikristallicheskikh metallakh)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958 Vol 6 Nr 1 pp 128-134 (USSR)

ABSTRACT: In an earlier paper (Ref.1) one of the authors pointed out that plastic deformation in commercial coarse grain iron is non-uniformly distributed with a clearly pronounced quasi-periodicity as regards the degree of deformation. In this paper the author publishes the results of further study of the quasi-periodicity in the distribution of residual deformation. The main experiments consisted of tensile tests in the range of plastically uniform deformation (until neck formation) of specimens of various engineering carbon and alloy steels (Table 1, p 128). The limit relative elongations were up to 0.14%. Some of the investigations were carried out at +20°C. However, a number of investigations were also carried out at -196°C. The results are tabulated and graphed and the following conclusions are

Card 1/3

On the Distribution of Plastic Deformation in Polycrystalline Metals

arrived at: The phenomenon of periodicity in the distribution of plastic deformation in a deformed polycrystal is a natural consequence of the general non-uniformity of the deformation of grains of a polycrystalline metal. It was found that the deformation in a body is composed of alternations of regions with strong deformations and regions with slight deformations, the dimensions of which are larger by 1 to 2 orders of magnitude than the dimensions of the grains from which the polycrystal is built up. It was found that such a type of non-uniformity in the deformed state may lead to internal stresses which equalise over areas larger than type II stresses do. The authors express the assumption that these phenomena are likely to influence appreciably the processes of corrosion and failure under the effect of an external medium. Numerous components in engineering which are subjected to an intensive effect of an active external medium are produced by deformation in the cold state. Undoubtedly, the phenomenon of periodicity in the distribution of the deformation and the resulting internal stresses should

On the Distribution of Plastic Deformation in Polycrystalline Me

appreciably intensify the inclination of the metal to localised corrosion or localised failure. Further study of this problem is considered desirable. There are 3 figures, 4 tables and 6 references, 4 of which are Soviet, 2 English.

SUBMITTED: July 10, 1956

Card 3/3

1. Alloys--Deformation 2. Alloys--Crysta
3. Alloys--Stresses

BYKOV, Vladimir Aleksandrovich; PASHKOV, P.O., nauchnyy red.; APTEKMAN, M.A., red.; SHISHKOVA, L.M., tekhn.red.

[Plasticity and strength of structural steels] Plastichnost' i prochnost' konstruktsionnoi stali. Leningrad, Gos.soiuznoe izd-vo sudostroit.promyshl., 1959. 198 p. (MIRA 13:2)
(Steel, Structural--Testing)

PASHKOV, P.O.

21(6) PHASE I BOOK EXPLOITATION SOV/2385

Akademiya nauk SSSR

Nekotoryye problemy prochnosti tverdogo tela; sbornik statey (Some Problems in the Strength of Solids; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 386 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V. I. Aver'yanov; Tech. Ed.: R. S. Pevzner; Editorial Board: A.F. Ioffe, Academician; G. V. Kurdyumov, Academician; S. N. Zhurkov, Corresponding Member, USSR Academy of Sciences; B. P. Konstantinov, Corresponding Member, USSR Academy of Sciences; F. F. Vitman, Doctor of Physical and Mathematical Sciences, Professor (Resp. Ed.); L. A. Glikman, Doctor of Technical Sciences, Professor; N. A. Zlatin, Doctor of Physical and Mathematical Sciences; V. A. Stepanov, Doctor of Technical Sciences; Ya.B. Fridman, Doctor of Technical Sciences, Professor; B. S. Ioffe, Candidate of Technical Sciences (Deputy Resp. Ed.).

PURPOSE: This book is intended for construction engineers, technologists, physicists and other persons interested in the strength of materials.

COVERAGE: This collection of articles was compiled by the Otdeleniye fiziko-matematicheskikh nauk AN SSSR (Department of Physical and Mathematical Sciences) and the Fiziko-tekhnicheskiy institut AN SSSR (Institute of Applied Physics, Academy of Sciences, USSR) in commemoration of the 80th birthday of Nikolay Nikolayevich Davidenkov, Member of the Ukranian Academy of Sciences, founder and head of the Otdel prochnosti materialov (Department of the Strength of Materials) at the Institute of Applied Physics, Academy of Sciences, USSR, founder of the Fakul'tet fizicheskogo metallovedeniya (Department of Physical Metallurgy) at the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute), recipient of the Stalin Prize (1943), the Order of the Red Banner of Labor (1945) and the Order of Lenin (1953). The articles deal with the strength of materials, phenomena of imperfect elasticity, temper brittleness, hydrogen embrittlement, cold brittleness, influence of deformation speed on the mechanical properties of materials, fatigue of metals, and general problems of the strength, plasticity, and mechanical properties of nonmetals. Numerous personalities are mentioned in the introductory profile of Professor Davidenkov. References are given at the end of each article.

Card 7/10

PASHKOV P. O.

PHASE I BOOK EXPLOITATION SOV/3752

Metallovedeniye; sbornik statey, No. 3 (Physical Metallurgy; Collection of Articles, No. 3), Leningrad, Sudpromgiz, 1959. 390 p. 3,200 copies printed.

Ed.: G. L. Kagyris, Candidate of Technical Sciences; Literary and Tech. Ed.: N. I. Doronenko.

PURPOSE: This collection of articles is intended for scientific personnel at research and educational institutions and industrial plants and also for advanced students.

COVERAGE: The articles report the results of investigations of 1) the effect of various factors on the susceptibility of constructional and heat-resistant steels and titanium alloys to brittle failure at various temperatures under various conditions of loading (long-time, short-time, cyclic, noncyclic) 2) alloying, structure, and condition of alloys as related to their mechanical properties, and 3) corrosion resistance and evaluation of stainless and heat-resistant steels. The articles are accompanied by numerous Soviet and non-Soviet references. No personalities are mentioned.

PASHKOV, P.O., doktor tekhn.nauk, prof.

Strenght of metals in connection with their microstructure.
Metallovedenie 3:166-197 '59. (MIRA 14:3)
(Metallography) (Crystal lattices)

PASHKOV, P.O., doktor tekhn.nauk, prof.; BRATUKHINA, V.A., inzh.

Mechanical strength of foil. Metallovednie 3:214-229 '59.
(MIRA 14:3)

(Metal foils--Testing)

PHASE I BOOK EXPLOITATION SOV/5315

Pashkov, Petr Osipovich, Professor, Doctor of Technical Sciences

Razryv metallov (Rupture of Metals) Leningrad, Sudpromgiz, 1960. 242 p. 10,000 copies printed.

Scientific Ed.: S.S. Shurakov; Ed.: I.A. Shaykevich; Tech. Ed.: A.I. Kontorovich.

PURPOSE: This book is intended for physical metallurgists, production engineers, and workers in scientific research institutes of the shipbuilding industry. It may also be useful to engineers engaged in the mechanical testing and evaluation of the strength of metals.

COVERAGE: The book contains data on tension and rupture of metals, on the correct use of the characteristics obtained in tensile testing and on physical phenomena accompanying the rupture and failure of metals. Information is given on basic regularities in the failure and strength of metals under the influence of external factors: time, temperature, environment, and the shape of specimen. The author thanks L.S. Moroz, Doctor of Technical Sciences, and S.S. Shurakov, Candidate of

Card 1/5

LOZOVSKAYA, V.F. (Novosibirsk); PASHKOV, P.O. (Novosibirsk); SEREBRYAKOV, A.V. (Novosibirsk)

Rate of growth of cracks in the plastic failure of metals. PMTF no.1:103-109 My-Je '60. (MIRA 14:8)
(Deformations (Mechanics)) (Plasticity)

31252
S/207/61/000/005/012/015
D237/D303

10.7600

AUTHORS: Lozovskaya, V.F., Pashkov, P.O., and Serebryakov, A.V. (Novosibirsk)

TITLE: Kinetics of fracture growth in copper foil

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1961, 109 - 111

TEXT: The purpose of the experiment was to obtain data on the kinetics of metal fracture. Velocity of increase of cracks in a thin metal foil with a shallow cut on one edge on stretching was taken as a characteristic measure of fracture kinetics. Dependence of this velocity on the velocity of deformation, condition of material and geometry of the sample, was investigated. The copper foil used was: 1) Well hardened by hammering, whose dimensional deformation after the fracture was equal to zero; 2) Well annealed (700°C) and possessing a high degree of plasticity. Stretching was performed on the machine ФМ-100 (FM-100) specially modified. In the case of annealed foil experimental details and data processing were identi-

Card 1/3

cal to those in the earlier work of the authors (Ref. 1: PMTF, 19[illegible] no. 1), whi[illegible]e in the case of hardened material, four insulated copper wires were glued to the foil, and their consecutive ruptures were recorded on the oscillograph. At higher velocities, a high speed cine camera was also used. Qualitative interpretation of data obtained was based on energy considerations. Thus fracture velocity for any width of foil per unit time was given by

$$A + U - P - K = 2\gamma' V, \qquad (3.1)$$

where A - work done by the machine, U - decrease of elastic energy of the foil, P - energy of plastic deformation, γ' - effective surface energy per unit length of the fracture, K - kinetic energy of the foil, V - velocity of fracture. In a hardened material the fracture, once started, is self-supporting and if velocity of fracture is equal to the velocity of sound in that material, the result can be catastrophic. Also, velocity of fracture is proportional to the length of the sample, till it reaches maximum, which is dependent on both physical state and geometrical properties of the sample. Qualitative interpretations for annealed material were carried

Kinetics of fracture growth in ...

in a similar manner. In conclusion the authors note that copper is hardly a brittle metal, hence the possibility of high velocity fracture should not be limited to brittle materials. There are 5 figures and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: E. Orowan, Condition of high-velocity ductile fracture, J. Appl. Phys. 195[illegible], v. 26, no. 7, 900-902.

SUBMITTED: July 25, 1961

Card 3/3

LOZOVSKAYA, V.F.; PASHKOV, P.O.

Kinetics of the fracture of thin metal sheets. Izv. SO AN SSSR no.2 Ser. tekh. nauk no.1:104-116 '63. (MIRA 16:8)

1. Institut gidrodinamiki Sibirskogo otdeleniya AN SSSR, Novosibirsk.
(Metals--Brittleness)

PASHKOV, P.O. (Volgograd)

Spontaneous fracture in the deformation of solid bodies.
PMTF no. 6:182-185 N-D '63. (MIRA 17:7)

L 02199-67 EWT(m)/EWP(w)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HW
ACC NR: AR6031070 SOURCE CODE: UR/0277/66/000/007/0011/0011

AUTHOR: Gelunova, Z. M.; Pashkov, P. O.; Tambovtseva, L. N.

TITLE: Characteristics of the shock wave effect on medium carbon steel with a martensite structure

SOURCE: Ref. zh. Mashinostr mat konstr i raschet detal mash. Gidropr. Abs. 7.48.70

REF SOURCE: Sb. Materialy Nauchn. konferentsii. Sovnarkhoz Nizhni-Volzhsk. ekon. r-na. Volgogradsk. politekhn. in-t. T. I. Volgograd, 1965, 275-279

TOPIC TAGS: martensite, carbon steel, shock wave, steel structure, austenitic steel

ABSTRACT: Studies were made of the characteristics of the effect of a powerful shock wave (200—300 kbar) on the structure and hardness of samples of 30KhGSA, 40Kh, and 65G steels hardened for low-tempered martensite. Explosive hardening has practically no effect on martensitic steel, which becomes even softer when subjected to a powerful compression shock wave. Its low capacity for hardening leads to rapid failure even under stresses by soft shock waves. A bibliography of 2 reference items is given. [Translation of abstract]

SUB CODE: 13/

Card 1/1 UDC: 669.14.018:539.4:539.89

L 07464-67 EWT(d)/EWT(m)/EWP(k)/EWP(w)/EWP(v)/EWP(t)/ETI IJP(c) EM/JD/HM/HW
ACC NR: AP6035948 (A) SOURCE CODE: UR/0129/66/000/010/0016/0018

AUTHOR: Kofman, A. P.; Pashkov, P. O.; Yavor, A. A.

ORG: Volgograd Polytechnic Institute (Volgogradskiy politekhnicheskiy institut)

TITLE: Mechanical properties of composite high-strength sheets and plates

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 10, 1966, 16-18

TOPIC TAGS: steel, stainless steel, ~~clad steel, niobium~~ alloy steel, structural steel, high strength steel, composite steel, composite steel strength, composite steel ductility/30KhGSA steel, 30KhNSVFA steel, Kh18N10T steel

ABSTRACT: The effect of cladding on the strength and ductility of high-strength medium-alloy structural steels has been investigated. The 30KhGSA and 30KhNSVFA steel plates were clad on one or both sides with a layer of Kh18N10T austenitic steel. The cladding thickness was 20—50% of the thickness of the base plate. It was found that one-side and, particularly, two-side cladding significantly increased the ductility and decreased the strength of the steels. For example, unclad 30KhGSA steel hardened and low tempered had a tensile strength of 160 kg/mm^2, an elongation of 4—5% and a reduction of area of 0—2%. The same steel clad on both sides with a Kh18N10T steel layer (total thickness of cladding—20% of the base plate thickness) had a tensile strength of 125 kg/mm^2, and an elongation and reduction of area of 1% and 10—11%, respectively. Cladding 30KhNSVFA steel on both sides with

UDC: 620.17:669.868

Card 1/2

L 07464-67 3

ACC NR: AP6035948

Kh18N10T steel (total thickness -- 25% of the base plate) decreased the strength from 165 to 105 kg/mm^2 but increased the elongation and reduction of area from 5—6 and 4—5% to 15 and 13%, respectively. Cladding also increased the notch toughness of clad steels, reduced the notch sensitivity and practically eliminated the susceptibility to temper brittleness. The beneficial effect of Kh18N10T steel is explained by compression stresses in the cladding originated owing to a different coefficient of thermal expansion. The beneficial effect of Armco iron was much weaker. Orig. art. has: 2 figures and 4 tables.

SUB CODE: 13/ SUBM DATE: none/ ORIG REF: 004/ ATD PRESS: 5104

bimetal

Card 2/2

ACC NR: AR6034731 (N) SOURCE CODE: UR/0124/66/000/008/V039/V039

AUTHOR: Pashkov, P. O.; Sedykh, V. S.; Trykov, Yu. P.

TITLE: Failure of edges of metallic bar flats under pulsed loading

SOURCE: Ref. zh. Mekhanika, Abs. 8V291

REF SOURCE: Sb. Materialy Nauchn. konferentsii. Sovnarkhoz Nizhne-Volzhsk. ekon. r-na. Volgogradsk. politekhn. in-t T. 1. Volgograd, 1965, 309-313

TOPIC TAGS: detonation velocity, shear, metal failure

ABSTRACT: Bar flats made of various metals were thrown against a prismatic steel sample with the use of flat explosive charges. The throwing was mostly parallel, and partly at a small angle of incidence with varying air gaps or without them. The length and width of the thrown flats exceeded the respective dimensions of the stationary sample. A correlation was established between the velocity of detonation of the explosive and the angle of shear forming over the perimeter of the thrown plate (the angle between the surface of failure and the bar flat plane). Changes in the thickness of the flats (made of titanium alloy, 18-8 steel LO-62-1 brass, AMr 5BM

Card 1/2

ACC NR: AR6034731

aluminum alloy, in the throwing speed or charge level (ranging from 50 mm to 130 mm), as well as exceeding the dimensions of the flats over those of the stationary sample did not affect the shear angle. At a detonation velocity of 1750 m/sec, the shear angle was about 87 degrees, and at 3500 m/sec velocity, the angle was about 52 degrees. Orig. art. has 3 bibliographic titles. [KP]

SUB CODE: 20/

Card 2/2

L 15771-66 EWT(m)/EWP(w)/T/EWP(t)/EWP(k)/EWP(b) JD/HW

ACC NR: AP6005141 SOURCE CODE: UR/0126/66/021/001/0092/09

AUTHOR: Atroshchenko, B. S.; Pashkov, P. O.; Ryadinskaya, I. M.

ORG: none

TITLE: Explosive strengthening of Armco-iron

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 1, 1966, 92-96

TOPIC TAGS: ~~Armco~~ iron, metal hardening, ~~Armco iron strengthening~~, explosive ~~strengthening~~ forming

ABSTRACT: Some specific features of explosion-induced strain hardening in Armco-iron have been studied. Twinning was found to have a significant strengthening effect. For instance, at a surface hardening of 140 HB (low explosion pressure), the microhardness of twins was 180 Hμ and that of single grains, 150 Hμ. At a higher surface hardness of 220 HB (high explosion pressure), the microhardness of twins was 260—270 Hμ. The effect of explosive strengthening depends also on grain size and the condition of the metal. While in the case of coarse grains the surface hardness did not exceed 180—190 HB, the hardness of fine-grained metal reached 220—230 HB. In specimens annealed at 1000C and brine quenched, explosive loading increased the hardness to 280—290 HB, compared to 227—232 HB obtained in cold-rolled specimens. Softening (with

Card 1/2 UDC: 539.63

L 15771-66
ACC NR: AP6005141

annealing at 400—600C) of explosively strengthened metal differs significantly from that of conventionally strain-hardened metal. While in the latter a relatively short period of relaxation is followed by recrystallization, in the former the recrystallization is delayed and a second relaxation period takes place. Unlike conventional strain hardening, the residual plastic deformation does not increase the hardness in explosive strengthening and even can lower it owing probably to annealing by the heat generated by deformation. Orig. art. has: 6 figures. [WW]

SUB CODE: 11/ SUBM DATE: 17Feb65/ ORIG REF: 006/ ATD PRESS: 4120

Card 2/2

L 14346-66 EWT(m)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b) JD/HM

ACC NR: AP6005386 SOURCE CODE: UR/0413/66/000/001/0134/0134

INVENTOR: Sedykh, V. S.; Pashkov, P. O.; Kofman, A. P.; Gokhshteyn, B. Ye.; Pavlov, A. I.; Likhachev, G. P.

ORG: none

TITLE: A method of producing three-layer metal plates. Class 49, No. 177759

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 134

TOPIC TAGS: metal plate, three layer plate, clad plate, plate cladding, explosive cladding

ABSTRACT: This Author Certificate introduces a method of producing three-layer metal plates by explosive welding. Explosive charges are placed on the outer surface of the plates to be welded. In order to increase productivity, both outer plates are welded to the center plate simultaneously by a charge detonated at one point. In order to improve the quality of the bond, a centering prism is set up on the upper edges of the plates so that one edge of the prism faces the detonator. Orig. art. has: 1 figure.

[WW]

SUB CODE: 11/ SUBM DATE: 23Mar64/ ATD PRESS: 4197

Cladding

Card 1/1 UDC: 621.791.044-419.5

L 4182-66 EWT(m)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) JD/HW

ACCESSION NR: AP5016533 UR/0126/65/019/006/0923/0925

620.183 + 539.378

37
34
B

AUTHOR: Atroshchenko, E. C.; Pashkov, P. O.; Ryadinskaya, I. M.

TITLE: An investigation of the fine structure of explosion-hardened armco iron

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 6, 1965, 923-925

TOPIC TAGS: iron, metal hardening, hardness, fine structure, metal stress

ABSTRACT: The relationship between the hardening produced by explosion and the fine-structure characteristics of armco iron containing 0.05% carbon was studied. As the hardness varied, changes were observed in broadening of the x-ray diffraction lines, second-order stresses, dislocation density, and size of mosaic blocks. The data shows that the passage of the elastic-plastic wave during explosive loading is associated with the development of defects in the fine structure. A definite relationship could not be established between the hardening and any of the fine-structure characteristics studied. However, a comparison of the hardening with the broadening of the (220) line shows that the hardening is related to the appearance of at least two types of defects which differ in character or in distri-

Card 1/2

L 4182-66

ACCESSION NR: AP5016533

3

bution in the volume of the metal: (1) defects which harden the material slightly at relatively low explosion pressures and (2) defects which harden it considerably at high pressures. Orig. art. has: 4 figures.

ASSOCIATION: Volgogradskiy politekhnicheskiy institut (Volgograd Polytechnic Institute)

SUBMITTED: 27Apr64 ENCL: 00 SUB CODE: MM

NO REF SOV: 008 OTHER: 002

Card 2/2

L 1310-66 EWT(m)/EWP(w)/EWP(i)/EWA(d)/I/EWP(t)/EWP(z)/EWP(b) JD/HM/EM

ACCESSION NR: AP5022175 UR/0032/65/031/009/1125/1126
620.171:621.9

38
34
B

AUTHOR: Kofman, A. P.; Pashkov, P. O.; Yavor, A. A.

TITLE: Uniform strain of bimetals

SOURCE: Zavodskaya laboratoriya, v. 31, no. 9, 1965, 1125-1126

TOPIC TAGS: bimetal, carbon steel, stainless steel, metal stress, strain, stress analysis

ABSTRACT: The uniform strain of bimetals is evaluated as a function of the uniform strain of the material of the layers. Considering the stress-strain diagrams of the bimetal and layer material (see Fig. 1 of the Enclosure), the uniform strain of the bimetal may be defined as the sum

$$\varepsilon = \varepsilon_1 + \Delta\varepsilon \quad (1)$$

where ε_1 is the uniform strain of the more rigid layer. Segment $\Delta\varepsilon$ is proportional to the difference $\varepsilon_2 - \varepsilon_1$ and to the relative thickness of the clad layer h_2/h_1 (h being the thickness of the bimetallic sheet), i.e.,

$$\Delta\varepsilon = (\varepsilon_2 - \varepsilon_1) \cdot \frac{h_2}{h} \quad (2)$$

Card 1/3

L 1319-66
ACCESSION NR: AP5022175

The uniform strain of the bimetal will be given by

$$\varepsilon = \varepsilon_1 + (\varepsilon_2 - \varepsilon_1) \cdot \frac{h_2}{h} \qquad (3)$$

Formula (3) was verified on sheet specimens of the bimetal carbon steel-stainless steel for various cladding thicknesses and various tempering modes, and the results warrant its use in practical calculations. Orig. art. has: 2 figures and 3 formulas.

ASSOCIATION: Volgogradskiy politekhnicheskiy institut (Volgograd Polytechnic Institute)

SUBMITTED: 00 ENCL: 01 SUB CODE: MM, AS

NO REF SOV: 003 OTHER: 000

Card 2/3

L 1319-66
ACCESSION NR: AP5022175 ENCLOSURE: 01

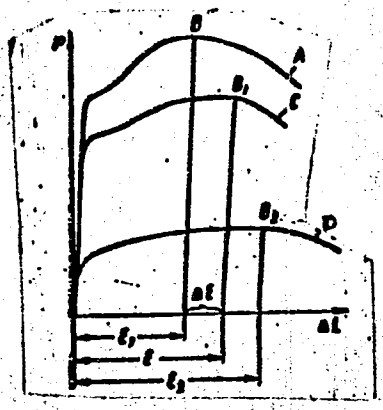


Fig. 1. Stress-strain diagram of the bimetal (C) and layer material (A) and (D)

Card 1/3

L 53588-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(c) Pf-4
ACCESSION NR: AP5011755 MJW/JD/HW UR/0126/65/019/004/0619/0623

AUTHOR: Atroshchenko, E. S.; Pashkov, P. O.; Ryalinskaya, I. M.

TITLE: Explosive strengthening of metals

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 4, 1965, 619-623

TOPIC TAGS: metal strengthening, explosive strengthening, iron strengthening, austenitic steel strengthening, stainless steel strengthening/1Kh18N9T steel, Armco iron

ABSTRACT: Strengthening Armco iron and 1Kh18N9T austenitic stainless steel by explosion under conditions approaching those of hydrostatic compression has been investigated. Specimens in the form of plates 3.5, 6.5, 10, or 12 mm thick were placed on a metal base and received an impact from a metal plate produced by an ammonite explosion. Experiments showed that the higher the deformation rate, i.e., impact velocity, the lower the degree of strengthening (see Fig. 1 of the Enclosure). Maximum strengthening was achieved at fairly low deformation rates (5—6% elongation). At high deformation rates (30—40% elongation), the lower the recrystallization temperature of the metal tested the greater the drop in strength. A maximum hardness of 28—240 HV in Armco iron and 280 HV in austenitic steel was obtained at 10

Card 1/3

L 53588-65

ACCESSIO NR: AP5011755

and 9% r duction (5 and 4.5% elongation), respectively. Corresponding values for static s rain hardening at the same reduction are 170 and 220 HV. Explosive strengthening did not affect the phase composition of the metals tested. The increase o strength produced by explosion-induced impact is believed to be associated not only with dynamic deformation, but also with the instantaneous elastic deformation p oduced by hydrostatic compression. Orig. art. has: 3 figures and 2 tables.

[ND]

ASSOCIATION: Volgogradskiy politekhnicheskiy institut (Volgograd Polytechnical Institut)

SUBMITTED: 05Sep63 ENCL: 01 SUB CODE: MM

NO REF SOV: 006 OTHER: 003 ATD PRESS: 4015

Card 2/3

L 53588-65

ACCESSION NR: AP5011755

ENCLOSURE: 01

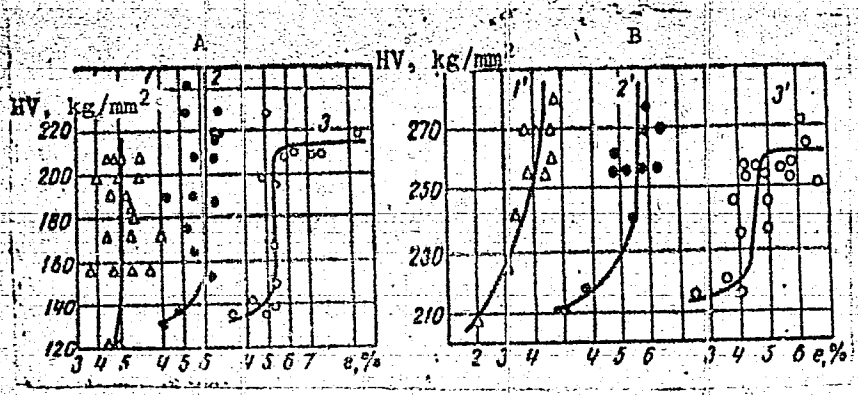


Fig. 1. Dependence of HV on elongation

A) Armco iron (specimen thickness; 1 - 3.5 mm, 2 - 6.5 mm, 3 - 12.0 mm); B) 1Kh18N9T steel (specimen thickness: 1 - 3.5, 2 - 6.5, 3 - 10.0 mm).

Card 3/3

PUTSYKIN, G.G.; PASHKOV, P.P.; VEYTSEL', M.Ya.

Analysis of the directional crystallization process in "Magnico" - type alloys. Fiz.met.i metalloved. 15 no.4:529-533 Ap '63. (MIRA 16:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektromekhaniki.
(Iron-nickel-aluminum alloys--Magnetic properties)
(Crystallization)

L 1407-63 EWP(q)/BDS/EWT(1)/EWT(m) AFETC/ASD LJP(C)/JD

ACCESSION NR: AP3000095 S/0126/63/015/004/0529/0533

58

AUTHOR: Putsykin, G. G.; Pashkov, P. P.; Vaytsel', M. Ya. 57

TITLE: Analysis of the directed crystallization process in "Magniko" type alloy

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 4, 1963, 529-533

TOPIC TAGS: directed crystallization, "Magniko" alloy, criterium of directed solidification

ABSTRACT: The influence of solidification conditions upon the crystalline structures of castings was studied. The process which leads to the formation of magnets with a columnar structure was investigated theoretically and experimentally. The data obtained for the relation between the directed solidification coefficient K and the casting mold temperature are presented. The experiments showed that the melted alloy solidification proceeded in the direction of the main temperature gradient and also away from the walls of the molds. The values of K represent the speeds of crystallization fronts moving in both directions. The Sa values were calculated on the basis of temperature gradients and thermal conductivity. They were also obtained experimentally for molds heated to different temperatures and for various cooling speeds. The authors concluded that K increases considerably if

Card 1/2

L 13107-63
ACCESSION NR: AP3000095

the crystallization process takes place in a mold furnace provided with bottom refrigeration. A considerable increase in K is achieved by heating molds to the temperature of the alloy crystallization. The results obtained are substantiated by photographs showing magnet structure (longitudinal section) formed at 1410C. The specimen produced had maximum magnetic energy 7 - 8 times 10 sup 6 gauss-ergs. Orig. art. has: 8 formulas and 5 figures.

ASSOCIATION: Vsesoyuzny*y nauchno-issledovatel'skiy institut elektromekhaniki (All-Union Scientific Research Institute of Electromechanics)

SUBMITTED: 15Jan62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: 00 NO REF SOV: 002 OTHER: 004

Card 2/2

SHASKOL'SKAYA, M.P.; PASHKOV, P.P.

Growth of a crystalline layer on a plastically bent rock salt single crystal. Kristallografiia 6 no.3:476-479 My-Je '61.
(MIRA 14:8)

1. Moskovskiy institut stali imeni I.V. Stalina.
(Salt crystals—Growth)

1 PASHKOV, S A.

21(4) PHASE I BOOK EXPLOITATION SOV/2583

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

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

PART II. EXPERIMENTAL AND RESEARCH REACTORS

PART III. PHYSICS AND ENGINEERING OF REACTOR DESIGN

[redacted], . .

Technology

(Socialist care for machinery). (Moskva), Morskoi transport, 1951.

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

PESKOV, V.

We are improving public [illegible] services. Zhil.-kom. khoz. 11 no. 1:2-4 '61. (MIRA 14:2)

1. Pervyy sekretar' [illegible]skogo gorodskogo komiteta Kommunisticheskoy [illegible] Soyuza. (Russia--Municipal services)

PASHKOV, V.

It is your city, become its boss. Sov. profsoiuzy 19 no.21: 4-5 N '63. (MIRA 17:1)

1. Pervyy sekretar' Sevastopol'skogo torodkogo komiteta Kommunisticheskoy partii Ukrainy.

KRULEV, G., inzh.; PASHKOV, V., inzh.

Some characteristics of the State Standard 2965-60. Avt.transp. 39 no.9:46-47 S '61. (MIRA 14:10)
(Traffic signs and signals--Standards)

BORDUKOV, V., inzh.; MOTOLYANSKIY, S., inzh.-ekonomist; PASHKOV, V., arkhitektor; RAYTMAN, S., arkhitektor

Residential district with four-and five-story apartment houses. Zhil.-kom.khoz. 9 no.2:4-14 '59. (MIRA 12:5)
(Architecture--Designs and plans)
(Apartment houses)

ASHKOV, V.; GRACHEVA, V.

Road signs. Standartizatsiia 24 no.6:51-53 Je '60.
(MIRA 13:7)
(Traffic signs--Standards)

PASHKOV, V.

France through the eyes of Soviet students. Sov.torg. 35 no.2:58-63 F '62. (MIRA 15:1)
(France--Retail trade)

ACC NR: AP6032473 SOURCE CODE: UR/0056/66/051/003/0777/0779

AUTHOR: Pashkov, V. A.; Zverev, G. M.

ORG: none

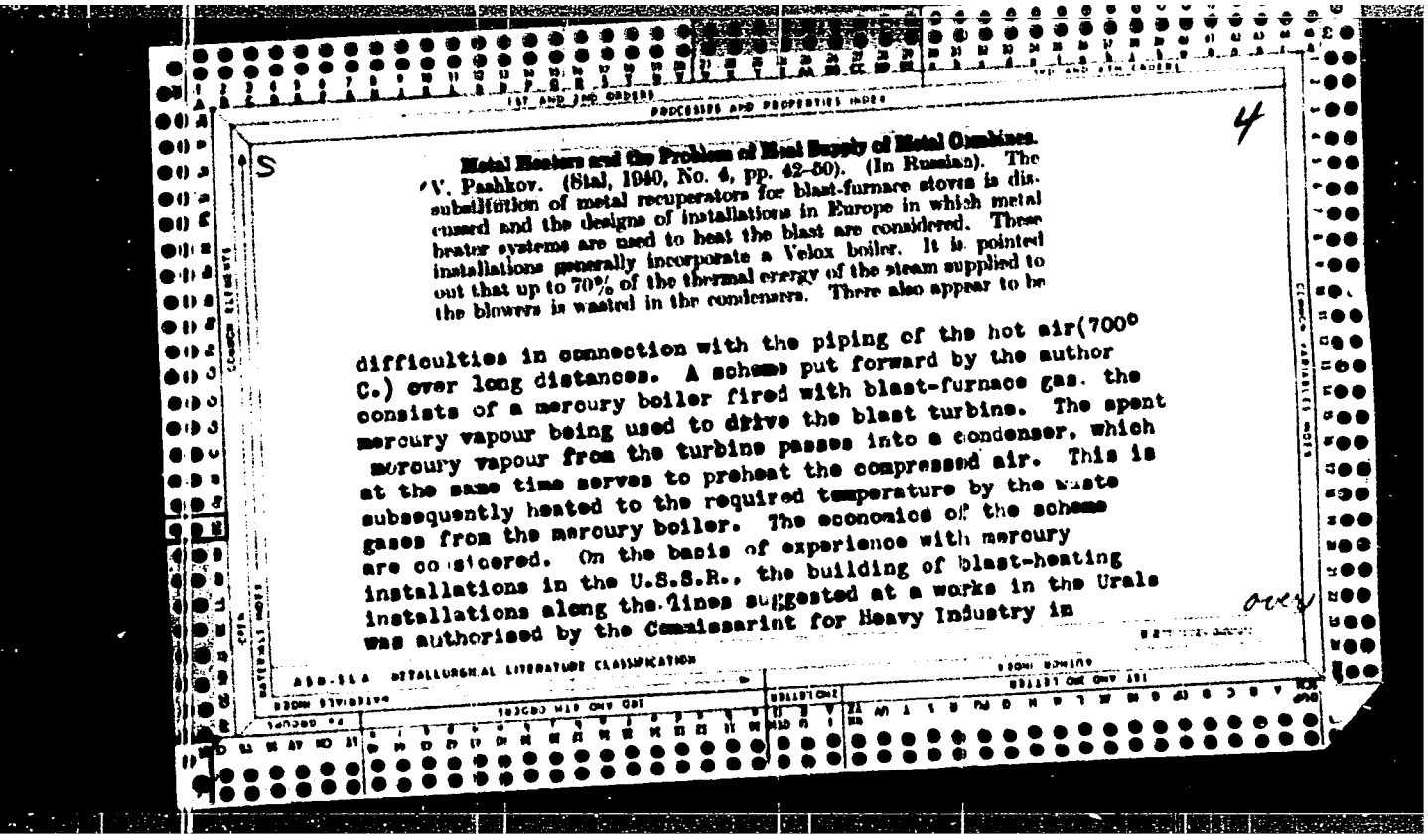
TITLE: Destruction of ruby and leucosapphire crystals by high-intensity laser beams

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 3, 1966, 777-779

TOPIC TAGS: nonlinear optics, stimulated Brillouin scattering, multiphoton ionization, ruby, leucosapphire, crystal damage, laser induced damage, laser effect, LASER BEAM, CRYSTAL PROPERTY, SAPPHIRE, CRYSTAL DEFECT

ABSTRACT: An experimental investigation was made of the damage induced in ruby and leucosapphire crystals by the focused beam from a 1-j 30-Mw Q-switched laser. The damage in leucosapphire crystals at the focus of an f:5 cm lens was in the form of a spherical channel 1 mm in diameter. In the case of an f:15 cm lens, the lagging crystal surface sustained small, crater-like damage. Certain ruby crystals (group I) sustained damage identical to that in leucosapphire crystals, while in other ruby crystals (group II) the damage was in the form of "tracks" consisting of a series of small cracks perpendicular to the incident radiation. The tracks were several cm long and 2--3 mm in diameter and were observed for both the f:5 and f:15 lenses. The damage threshold for leucosapphire and Group I ruby crystals was approximately 10^{10} w/cm^2, while that in Group II ruby crystals was about 10^8 w/cm^2. Damage in all

Card 1/2



4

S

Metal Heaters and the Problem of Heat Supply of Metal Combines.

V. Pashkov. (Stal, 1940, No. 4, pp. 42–50). (In Russian). The substitution of metal recuperators for blast-furnace stoves is discussed and the designs of installations in Europe in which metal heater systems are used to heat the blast are considered. These installations generally incorporate a Velox boiler. It is pointed out that up to 70% of the thermal energy of the steam supplied to the blowers is wasted in the condensers. There also appear to be difficulties in connection with the piping of the hot air(700° C.) over long distances. A scheme put forward by the author consists of a mercury boiler fired with blast-furnace gas. the mercury vapour being used to drive the blast turbine. The spent mercury vapour from the turbine passes into a condenser, which at the same time serves to preheat the compressed air. This is subsequently heated to the required temperature by the waste gases from the mercury boiler. The economics of the scheme are considered. On the basis of experience with mercury installations in the U.S.S.R., the building of blast-heating installations along the lines suggested at a works in the Urals was authorised by the Commissariat for Heavy Industry in

over

PASHKOV, V. D.

"Modernization of a Blast Furnace Shop in Respect to Power Supply." Sub 26 Jun 47, Power Engineering Inst imeni G. M. Krzhizhanovskiy, Acad Sci USSR

Dissertations presented for degrees in science and engineering in Moscow in 1947.

SO: Sum.No. 457, 18 Apr 55

PASHKOV, V.D., inzhener.

Open-hearth furnace waste-heat boilers. Stal' 7 no.1:66-71 '47.
(MLRA 9:1)
1.Gosudarstvennyy institut po proyektirovaniya metallurgicheskikh zavodov.
(Open-hearth furnaces) (Heat regenerators)

PASHKOV, V. L.

PA 18T28

USSR/Furnaces, Metallurgical
Heating, Steam

May 1947

"Utilization of the Heat of Cooling Water of Martin Furnaces," V. D. Pashkov (Gipromez), 4 pp

"Stal'" Vol VII, No 5

The utilization of the heat given out by large bodies of cooling water should be very economical for Martin furnaces. Primarily such water could be used for heating buildings. Exceptional temperature drop of water during cooling of furnace elements will not change temperature conditions.

18128

ROSTOVTSEV, S.T., doktor tekhn.nauk, prof.; PASHKOV, V.D., kand.tekhn.nauk; RATNER, Yu.Z.

Review of V.M. Sholodrin's book "Theory of high pressure blast furnace smelting." Stal' 24 no.6:502-506 Je '64. (MIRA 17:7)

1. Gosudarstvennyy soyuznyy institut po proyektirovaniyu metallurgicheskikh zavodov (for Pashkov). 2. Zavod "Azovstal'" (for Ratner).

PASHKOV, V.D., referent.

Compression and beating of blast furnace blow (From foreign periodicals).
Stal' 16 no.4:372-378 Ap '56. (MLRA 9:7)
(Blast furnaces)

SOV/133-58-7-26/27

AUTHOR: Pashkov, V.D., Candidate of Technical Sciences

TITLE: Development of Schemes for the Utilisation of Secondary Resources of Power (Razvitiye skhem ispol'zovaniya vtorichnykh energeticheskikh resursov)

PERIODICAL: Stal', 1958, Nr 7, pp 660 - 667 (USSR)

ABSTRACT: Up to the present, the possibility of utilisation of heat within integrated iron and steel works and a neighbouring town was considered as an adequate justification of the economy of the utilisation of secondary power sources (waste heat boilers, evaporation cooling etc.). There was no question of comparing the economy of such utilisation with the efficiency of obtaining heat in power stations as the latter also had usually low initial steel parameters (up to 30 atm. abs. and 400 °C). However, in view of an increasing economy of operation of large power stations, the old approach to the problem should be reconsidered. In the paper, the dependence of the efficiency of utilisation of secondary power sources on the scheme used and parameters of the utilisation installations is discussed. The comparison of economy of utilisation is considered for schemes of power and heat production on modern regional condensational power stations operating with the following

Card 1/5

Development of Schemes for the Utilisation of Secondary Resources of Power

parameters: 100 ata and 510 °C, 140 ata and 570 °C; 240 ata and 610 °C. The following schemes are considered: 1) the production of steam under pressure of 1.2-2.5 ata or hot water in the cooling systems of open-hearth furnaces and in economisers of heating systems, operating on waste gas leaving furnaces (Figure 1A); 2) the production of steam 3-8 ata in waste-heat boilers operating on waste gas from metallurgical furnaces (Figure 1Б); 3) the production of steam 13-18 ata in waste-heat boilers of furnaces (reheating, open-hearth, etc. - Figure 1B); 4) the production of steam of 35-45 ata in waste heat boilers of furnaces (reheating, open-hearth etc. - Figure 1В); 5) the production of electric power from waste gases leaving the furnace by installing compressor air turbines, utilising the heat of these gases for increasing the temperature and the working ability of compressed air (Figure 1Г); 6) The use of heat of waste gases from metallurgical furnaces in gas turbines of an expansion type for increasing the working ability of compressed blast furnace gas (Figure 1Д). It is concluded that:

Card 2/5

SOV/133-58-7-26/27

Development of Schemes for the Utilisation of Secondary Resources of Power

a) a method of determining the efficiency of utilisation of secondary power resources should be developed which takes into consideration their quality. As a basis, their comparison with the production of heat in modern power stations should be taken; b) on such comparison of various schemes of utilising waste heat, their utilisation indices can vary by a factor of 10. Whereupon the economy of utilisation of heat which can be achieved in comparison with the production of heat and power on TETs, in the case of utilising increased pressure of blast furnace gas, may exceed all the available heat of waste gases; c) for new furnaces and furnace installations, it is necessary to check the advantages of installing gas and air turbines in comparison with waste heat boilers operating at 45 ats and 450 °C. Whereupon the energy of increased pressure of blast furnace gas should be utilised; d) waste heat boilers should be retained as a rule on already operating and new installations when there exists a constant requirement for the produced steam and when there is a possibility of combining the contour of the circulation in the boiler with the system of

Card 3/5

Development of Schemes for the Utilisation of Secondary Resources of Power

evaporation cooling of the furnaces; e) waste heat boilers operating at a pressure below 45 ate can be installed only as an exception; f) the installation of economisers for heating purposes is advantageous only at temperatures of waste gases below 350 °C and when the installation of gas and air turbines is impossible due to local conditions; g) the use of systems of evaporation cooling separated from the circulation system of waste heat boilers is permissible only for works in which there is no TETs-PVS of high pressure and operating outside the radius of regional TETs. In cases when an independent system of evaporation cooling is left in operation, its efficiency should be compared with hot water cooling; h) the installation of turbines for utilising pressure drop from waste-heat boilers to the operating pressure should be widely used; i) turbines for exhaust steam are advantageous only in exceptional circumstances when other forms of heat consumption are absent. The utilisation in such

Card 4/5

SOV/133-58-7-20/27

Development of Schemes for the Utilisation of Secondary Resources of Power

turbines of steam from waste-heat boilers or new cooling systems for which an increase in steam parameters is possible cannot be recommended. There are 3 figures and 7 tables.

ASSOCIATION: Gipromez

1. Heat exchangers--Economic aspects 2. Waste gases--Applications
3. Industrial plants--Power

Card 5/5