

1. POBOCHTY, N. U.; PESOKHINSKIY, IA, Z.; Engs.
2. USSR (600)
4. Lathes-Safety Appliances
7. Safety device and attachment for woodworking lathes. Engs. Der. i lesokhim. orom. 1 1952

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

1. POBOCHIY, N. U. ENG.
2. USSR (600)
4. Woodwork
7. Imitation wood carving. Der i lesokhim. prom. 1 no.2. 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

1. POBOCHIY, N. U. : PEBOCHINSKIY, YA. Z.      ENG.

2. USSR (600)

4. Woodwork - Ukraine

7. Work practices of Ukrainian furniture factories. Der. i lesokhim. prom. 1 no. 6. 1952.

9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

POBOCHIY, N. Yu., Eng.

Plywood

Manufacturing high-grade plywood sheets. Der. i lesokhim. prom. 1, No. 7,  
1952.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

POBOCHIL, N. U.; PESCHINSKIY, Ya. Z.; Engs.

Furniture Industry

Imitation furniture trim, Der. i lesokhin. prom. 2, No. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

POBOCHIL, N. Yu., Eng.; PESOCHINSKIY, Ya. Z.

Grinding and Polishing

Electrified polishing apparatus. Der. i lesokhim. prom. 2, No. 4, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

POBOCHIY, N.U., inzhener; PESOCHINSKIY, Ya.Z., inzhener.

Work practice of Ukrainian furniture factories. Der.i lesokhim.prom. 2  
no.9:27-29 S '53. (MLRA 6:8)

1. Ministerstvo lesnoy i bumazhnoy promyshlennosti USSR.  
(Ukraine--Woodworking machinery) (Woodworking machinery--Ukraine)

POBOCHIY, N.U., inzhener

Work practices in Ukrainian furniture enterprises. Der.prom.4  
no.7:21 J1'55. (MIRA 8:10)

1. Glavukrmebel'prom  
(Ukraine--Furniture industry)



CZECHOSLOVAKIA

STRUHAR, M; MANDAK, M; POBOCIKOVA, K.

Chair of Galenic Pharmacy of the Pharmaceutical Faculty UK  
(Katedra galenickej farmacie Farmaceutickej fakulty UK),  
Bratislava (for all)

Bratislava, Farmaceuticky obzor, No 4, 1963, pp 153-156

"Content of Some Galenic Preparations of Rhubarb Roots."

I 20446-66 EWT(m)/EJA(a)/EWP(t) IJP(c) JD  
ACC NR: AP6008816 (N) SOURCE CODE: UR/0135/66/000/003/0028/0030

AUTHOR: Safonnikov, A. N. (Candidate of technical sciences); Pobol', A. A. 32

ORG: Institute of Electric Welding im. Ye. O. Paton (Institut elektrosvariki) B

TITLE: Electroslag welding of large austenitic chromium-nickel steel rings

SOURCE: Svarochnoye proizvodstvo, no. 3, 1966, 28-30 27 27

TOPIC TAGS: austenitic steel, chromium steel, nickel containing steel, steel ring, ring welding, electroslag welding

ABSTRACT: Conventional forging and rolling of large stainless-steel rings with a cross-section up to 900 cm<sup>2</sup> presents serious difficulties and sometimes is simply impossible. Therefore, a method for making such rings by electroslag welding has been developed and introduced into practice. According to this method the ring is assembled from several forged or rolled segments which are bent to a required radius. A mold is built around each joint. The welding is done with a flat electrode and a calcium fluoride-calcium oxide flux. With careful assembly the deformations can be kept to a minimum. The method can be used for rings of any diameter and cross section. Rings of the same diameter can be put on top of each other and welded as a single ring. The method has been successfully used in welding OKh18N10 steel rings 3000 and 900 mm in diameter with respective cross sections of 195 x 195 and 60 x 110 mm, and Kh18N10T steel rings with cross sections of 220 x 220 and

Card 1/2 UDC: 621.791.793:669.15-194

L 20446-66

ACC NR: AP6008816

0

250 x 300 mm. The mechanical properties and corrosion resistance of the welds were equal to those of the parent materials. Orig. art. has: 5 figures and 5 tables [DV]

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 4222

Card

212 BK

POBOL', L.D.; TSEPKIN, Ye.A.

Fishes from the ancient stronghold near Chaplin. Vestsi AN  
BSSR. Ser.bial.nav. no.2:137-140 '60. (MIRA 13:7)  
(CHAPLIN REGION--FISHES, FOSSIL)

DAMASKIN, B.I.; POBOL', O.N.; POLUKHIN, V.P. (Moskva)

Investigating the effect of the drive system of sewing machines  
on their efficiency. Shvein. prom. no. 6:10-14 N-D '65.  
(MIRA 18:12)

POBOL', V.K.

Electromagnetic removing of parts from electrolytic tanks. *Biol.*  
*tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch. i tekh.inform. 16*  
no.10:34-35 '63. (MIRA 16:11)

VODOLAZKIY, L.A.; POBORA, Ye.V.; SOLOV'YEVA, V.P.

Use of the TEK-1 tele-electrocardiograph in studies of the  
physiology of work. Trudy VNIIMIO no.3:146-147 '63  
(MIRA 18:2)

STEINBACH, M.; LAZAROVICI, Miriam; ILIE, G.; FOBOREAN, Ana; NEDELESCU, Raisa;  
CRAESCU, I.; BALANESCU, G.

Physico-chemical composition, fatty acid content and therapeutic value of some vegetable oils, fish oils and marine mammal oils of our country. Stud. cercet. med. intern. 5 no.5:555-566 '64

1. Institutul de medicina interna al Academiei R publice Populare Romine si Ministerul Sanatatii si Prevederilor Sociale (for Steinbach, Lazarovici). 2. Institutul de cercetari alimentare al Ministerului Industrii Alimentare (for Ilie, Foberan, Nedeleescu, Craescu, Balanescu).



RUMANIA

CHIMION, D., Dr; POBORAN, C., Chemist

Clinical Laboratory of Neurosurgery at State Hospital  
No. 9 "Prof. Dr. Gh. Marinescu" (Laboratorul Clinicii  
de neurochirurgie a Spitalului de stat nr. 9 "Prof. Dr.  
Gh. Marinescu"), Bucharest. Originally presented 30  
Mar 63 at a meeting of the Clinical Laboratory Section  
of the Bucharest Branch of the U.S.S.M. (For all).

Bucharest, Viata Medicala, No 12, 15 Jun 63, pp 847-854

"Remarks: On Alkaline Phosphatase Determinations By Means  
of the Lohman-Jendrasic Method."

(2)

POBORAN, V., prof.; GONTEANU, Zoe, asist.; MATEI, I., asist.

Dimensioning the face distances of the inner dump steps in the Roviari mine. Rev min 15 no.2:73-79 F '64.

LETU, N., ing.; POBORAN, V., ing.; MIREAN, C., ing.; FAUR, E., ing.

Study of timbering, choice of optimum section and profile shapes of the working drifts of layer 3 and the roof galleries of the thin layers in the Jiu Valley mines. Pt. 1. Rev min 14 no.4: 145-158 Ap '63.

ELIAS, H.; IUSTER, A.; POBORAN, V.; WEISER, G.

Research on the antistreptolysin O titer (ASLO) in acute articular  
rheumatism in children. Probl. reumat., Bucur. no. 6:77-84 '59.

(RHEUMATIC FEVER, blood)

(ANTISTREPTOLYSIN, blood)

POBORAN, V.

New technique in the methods of exploitation of coal deposits. p. 3,  
(Revista Minelor, Vol. 8, No. 1, Jan. 1957, Bucuresti, Rumania)

SO: Monthly List of East European Accessions (EEAL) Lc. Vol.6, No. 8, Aug 1957. Uncl.

POBORCHAYA, L.V.

Turbidity currents. *Okeanologia* 2 no.5:849-863 '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.  
(Turbidity)

BUDAK, B.M.; VINOGRADOVA, Ye.A.; GLASKO, V.B.; KONONKOVA, G.Ye.;  
POBORCHAYA, L.V.

Problem of unsteady water movement in a reservoir solved  
by an electronic computer. Meteor. i gidrol. no.12:14-21  
D. '63. (MIRA 17:3)

1. Moskovskiy gosudarstvennyy universitet, fizicheskoy  
fakul'tet.

Poborchaya, L. V.

USSR/ Geography

Card 1/1 Pub. 45 - 4/14

Authors : Poborchaya, L. V.

Title : Laboratory investigation of the movement of slimy suspension

Periodical : Izv. AN SSSR. Ser. geog. 6, 32 - 35, Nov-Dec 1955

Abstract : Experiments were conducted with a slime suspension taken from the Zhdanov harbor channel to determine its physical properties (movement in an aqueous medium). Results obtained are described. Four references: 1 USSR, and 3 USA (1937-1952). Table; graphs.

Institution : Central Sc. Res. Inst. of Economics and Exploit. of Water Transportation

Submitted : .....



POBORCHIY, V.S., inzh.

Automatic control of water level in small boilers. Prom.energ.  
18 no.2:22-25 F '63. (MIRA 16:2)  
(Boilers) (Automatic control)

POBORCHIY, Vsevolod Sergeyevich; ROZENBERG, V.N., red.; FREGER, D.P.,  
red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Experience in the automation of steam boilers fired with  
gas] Opyt avto: atizatsii parovykh kotlov, rabotaiushchikh na  
gazoobraznom toplive. Leningrad, 1962. 22 p.

(MIRA 15:10)

(Boilers--Firing) (Automatic control) (Gas as fuel)

SEN'KIN, V.I., inzh.; POBORCHIY, V.S., inzh.

Analysis of equations of the dynamics of a drum boiler with  
natural circulation. [Trudy] TSKTI 36:11-46 '60. (MIRA 14.4)  
(Boilers)

POBORCHIY, V.S., inzh.

Dynamics of mechanized fuel-bed burners. [Trudy] TSKTI 36:61-84  
'60. (MIRA 14:4)

(Boilers)

(Furnaces)

POBORCHIY, V.S.; SHAROVA, Z.S.

Automatic control of small boilers operating on gaseous fuels.  
Prom. energ. 15 no.12:23-29 D '60. (MIRA 13:12)  
(Boilers) (Automatic control)

POBORCHIY, V.S., inzh.

Automatic control of air feed in small furnaces with  
flame jet in the fuel bed. Energomashinostroenie 6 no.3:  
12-16 Mr '60. (MIRA 13:6)  
(Furnaces)

POBORCHYY V.5.  
P 34

PHASE I BOOK EXPLOITATION

SOV/3856

Leningrad. Tsentral'nyy nauchno-issledovatel'skiy kotloturbinnyy institut imeni I.I. Polzunova

Avtomaticheskoye regulirovaniye (Automatic Control) Moscow, Mashgiz, 1960.  
138 p. (Series: Its: Sbornik, kn. 36) Errata slip inserted. 3,500  
copies printed.

Scientific Ed.: V.D. Piven', Candidate of Technical Sciences; Ed. of Publishing House: N.Z. Simonovskiy; Tech. Ed.: Ye.A. Dlugokanskaya; Managing Ed. for Literature on the Design and Operation of Machinery (Leningrad Division, Mashgiz): F.I. Fetisov, Engineer.

PURPOSE: The book is intended for personnel in planning organizations and plant design offices and specialists in automation.

COVERAGE: This collection of 6 articles deals with automatic-control operations in shell (drum-type) boilers, particularly those in which steam conditions are maintained by impulses. Among the topics discussed are fuel-flow control, superheat temperature regulation, function of the feed regulator [governor],

Card 1/4

Automatic Control

SOV/3856

combustion control in mechanical stokers with grates, and the effects of leakage and clearances in servoboosters on control. The treatment is mathematical, and a number of theoretical formulas are deduced for computing definite parameters of control operations and steam-flow processes. Empirical results proving the validity of such formulas are cited. No personalities are mentioned. References follow each article.

TABLE OF CONTENTS:

Piven', V.D. [Candidate of Technical Sciences]. Automatic Combustion-Control System Operating on the Rate of Variations of the Controlled Parameter

3

The author's modification of an ordinary control system is based on the use of double-acting regulators of the Polzunov type, intended for positive self-balancing processes. It is proven that such systems are also applicable to negative [out-of-balance] processes, which are automatically corrected so as to regain the proper ratios between the quantities under control. This "flowmatic" type of control operates on the variations in the rate of steam flow from the boiler.

Card 2/4



80V/3856

Automatic Control

Sen'kin, V.I., and V.S. Poborchiy [Engineers]. Analysis of Combustion Equations Relative to the Dynamics of Natural-Circulation Shell Boilers

11

The analysis is attempted for the case when steam is generated by a succession of impulses, large enough to compensate for intervals between impulses. Formulas are deduced to determine the relationship between two different vapor "volumes" under the surface of evaporation, that is, the differential ratio of vapor under evaporation [in cubic meters] to the quantity of vapor obtained from the boiler [in kilograms per second].

Ayzenshtat, I.I. [Engineer]. Ways of Improving the Automatic Temperature-Control System for Superheated Steam in Shell Boilers

47

The article outlines the principles of intermediate desuperheating and suggests a three-impulse controlled-superheater system instead of the usual two-impulse type. Equations for the computation of the control parameters for a "multi-impulse" regulator are given.

Card 3/ 4

SOV/3856

Automatic Control

Poborchiy, V.S. Dynamics of Mechanical Stokers With Zone  
Combustion of Fuel 61

The author deduces a number of mathematical formulas for conditions controlling the combustion of fuel by layers (zones), as in chain-grate stokers and stokers of similar design.

Sen'kin, V.I. Natural Vibrations in the Pressure-Control System  
for Mazut [in Tubes] 85

The nature and frequency of natural vibrations and conditions causing the pressure-control regulator to vibrate are analyzed and determined.

Kirpichev, A.P. [Engineer]. Experimental Investigations of the  
Effects of Clearances and Laps in the Cutoff Valve of a Servomotor,  
Including the Effects of Oil Leakage, on the Sensitivity [Controlla-  
bility] of an Indirect Control Regulator 116

This article is an analysis of hydraulic servomotors operating on oil. The nature and magnitude of losses and their effect on automatic control are evaluated. Curves are plotted to trace the degree of such effects.

AVAILABLE: Library of Congress

Card 4/4

AC/pw/mas  
7-25-60

POBORCHIY, V. S.

Cand Tech Sci - (diss) "Study of the dynamics of automatic control of low-power steam boiler containing a flare-layer fire chamber." Leningrad, 1961. 10 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Polytechnic Inst imeni M. I. Kalinin); 150 copies; free; (KL, 5-61 sup, 192)

POBORCHIY, V.S., inzh.

Complete automation of small boiler installations. *Energomashinostroenie*  
4 no. 6:10-16 Je '58. (MIRA 11:8)

(Automatic control)  
(Boilers)

POHORIK, F.

4

18  
18  
✓ Alloy Steel Production by Combination of Open Hearth and Electric Furnaces, F. Pohorik, (*Problems and Perspectives of Czechoslovak Metallurgy and Foundry*, 1956, 212-218). The origins of the process are described and its application to the production of special qualities of steel for which the O.H. is unsuitable and the capacity of electric furnaces insufficient. It should be suitable for production of transformer and alloy steels for large ingots where uniformity, perfect deoxidation and high purity are required.

BB

3

Z/046/61/000/004/004/009  
D007/D102

AUTHOR Pobořil, František, Doctor, Engineer

TITLE: Long-term strength properties at elevated temperatures of welded joints of superheater tubes of inexpensive high-temperature austenitic steels

PERIODICAL: Zvárací sborník, no. 4, 1961, 404-416

TEXT: The article describes creep tests to fracture made with welded joints of inexpensive austenitic steels developed in the CSSR for superheater tubes and forgings used in thermal power plants operating with high steam parameters. The VÚHŽ, Výzkumný ústav hutnictví železa (VUHŽ, Ferrous Metallurgy Research Institute) and the Vítkovické železářny Klementa Gottwalda (Klement Gottwald Vítkovice Iron Works) developed the 17481, 17482, and 17483 inexpensive, high-temperature, austenitic, Mn-Cr steels alloyed with Ti, V, and Mo. This paper deals especially with suitable filler metals developed by the VÚZ, Výzkumný ústav zvaracský (VÚZ, Welding Research Institute) in Bratislava, and the long-term strength

Card 1/2

Z/046/61/000/004/004/009  
D007/D102

Long-term strength properties ...

properties of welded joints at elevated temperatures. Creep tests to fracture revealed that welded joints of superheater tubes have the same creep strength as the 17482 and 17483 base metals when filler metals MnCrMo(Nb) 17/7 and MnCrV(Nb) 17/10 are used. For welding 17481, 17482, and 17483 austenitic-steel tubes to ČSN 15 225 ferritic-pearlitic-steel tubes, the VZÚ-ZVIL, Výzkumný a zkušební ústav Závodů V.I. Lenina (VZÚ-ZVIL, Research and Testing Institute of the V.I. Lenin Works) developed a VZÚ 60 filler metal which contains a maximum of 0.10% C, 0.30% Mn, 0.80% Si, 19% Cr, 1.50% Ti, 15.0% Fe, 5.0% W+Mo, 0.80% Al, and balance Ni. It was found that the long-term creep strength of such a weld is determined by the creep strength of the transition zone of the 15 225 ferritic-pearlitic steel which is approximately 20% lower than the mean creep strength of the base metal in the not-affected zone. Engineer J. Koucký of the Ferrous Metallurgy Research Institute is the personality mentioned. There are 6 figures, 9 tables and 10 Soviet-bloc references. (Technical Editor: Engineer, Candidate of Sciences V. Gregor of the VÚZ Bratislava).

ASSOCIATION: VÚHŽ Praha (VÚHŽ Prague)

Card 2/2

40646

Z/034/62/000/010/001/002  
E073/F335

18 1130

**AUTHORS:** Pobořil, F., Engineer Doctor, Zezulová, M. and Prazak, M., Engineers

**TITLE:** Corrosion properties of austenitic stainless nickel- and molybdenum-alloyed chromium-manganese steels

**PERIODICAL:** Hutnické listy; no. 10, 1962, 705 - 712

**TEXT:** The results of earlier investigations with austenitic CrMn and CrMnNi steels with high nitrogen contents have provided information on the interrelation between the composition of the steel, solubility of nitrogen in the liquid steel and the rate of occurrence of gas bubbles and shrinkage cavities in cast ingots. These investigations enabled evolving a technology of smelting and casting austenitic Cr-Mn-N steels so as to obtain ingots free of bubbles and inadmissible shrinkage cavities. The object of the experiments described in this paper was to study the influence of additions of Ni and Mo on the corrosion properties of steel of the basic type 10Cr16Mn15N, containing approximately up to 0.1% C, 15% Mn, 16% Cr and maximum 0.40% N.

Card 1/3

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Z/034/62/000/010/001/002  
E073/E335

Corrosion properties .....

The laboratory experiments were carried out with two series of heats, one produced in a 100-kg high-frequency furnace, cast into ingots and formed by forging and rolling into 20-mm diameter rods; the second series was produced in an 8-kg high-frequency furnace cast into 8-kg ingots and forged into 20-mm diameter rod. In both series the rods were austenitized at 1 050 to 1 070 °C for 1 hour, followed by cooling in air. These experiments revealed that the corrosion resistance in the passive state can be improved by alloying with 0.5% Mo and still more by alloying with 2% Ni. Corrosion tests in 10% HCl at 20 °C revealed that this conclusion also applied to the active state. The laboratory experiments were followed by experiments on industrial heats of the following compositions (%):

Design	CSN designation	C	Mn	Si	Cr	Ni	Mo	N	P	S
17470	N 7470	0.05	14.0	max	16.0	-	0.30	0.32	max.	max.
		0.12	17.0	1.00	19.0	-	0.70	0.42	0.060	0.055
17471	N 7471	0.05	14.0	0.60	16.0	1.20	-	0.32	max.	max.
		0.12	17.0	1.50	19.0	2.00	-	0.42	0.060	0.055

Card 2/3

Corrosion properties ....

Z/034/62/000/010/001/002  
E073/E335

The corrosion-resistance in 65% boiling nitric acid of both these steels was found to be comparable with the resistance-to-corrosion of 17% Cr stainless steel ČSN 17041 but the passivation ability of these new steels, expressed quantitatively by the critical passivation current density, was higher and this was very favourable for the resistance-to-corrosion in slightly oxidising media. Both these developed steels are practically equivalent as regards resistance-to-corrosion. However, from the point of view of production technology, particularly as regards re-using scrap, steel 17471 was found to be more favourable. The elongation, contraction and impact-strength of these steels were virtually the same as those of austenitic CrNi steels but their yield point was about 100% higher. Full data are given on the mechanical and corrosion properties of the tested new steels. The production of steel 17471 is at present being introduced at the following Czech plants: VZKG; TŽ VŘSR - sheet mills and VTZ. There are 4 figures and 8 tables. X

ASSOCIATIONS: VUHŽ, Prague; SVUON G.V. Akimova, Prague.

SUBMITTED: February 21, 1962

Card 3/3

POBORIL, F., inz., dr.; ZEZULOVA, M., inz.; PRAZAK, M., inz.

Corrosion properties of austenitic nickel and molybdenum alloyed chrome-manganese of stainless steel. Hut listy 17 no.10:705-712 0 '62.

1. Vyzkumny ustav hutnictvi zeleza, Praha (for Poboril and Zezulova).
2. Statni vyzkumny ustav ochrany materialu G.V. Akimova, Praha (for Prazak).

POBORIL, Frantisek, inz., dr.

Long-lasting strength properties at elevated temperature of welded superheater-tube joints of austenitic high-temperature steels. Zvar sber 10 no.4:404-416 '61.

1. Vyzkumny ustav hutnictvi zeleza, Praha.

PAWERA, Karel, inz.; PILOUS, Vaclav, inz., kandidat technickych ved;  
POBORIL, Frantisek, inz., dr.

Microstructure and mechanical properties of weld joints of austenitic and ferrite pearlitic creep resisting steel for boilers with high parameters. Hut listy 16 no.3:186-197 Mr '61

1. Vitkovicke zelezarny Klementa Gottwalda, Ostrava (for Pawera).
2. Zavody V.I.Lenina, Vyzkumny a zkusebni ustav, Plzen (for Pilous).
3. Vyzkumny ustav hutnictvi zeleza, Praha (for Poboril).

Poborski, F.

18  
The Production of Transformer Steel by a Duplex Method  
Using Open-Hearth and Electric Furnaces, K. Hrbek and F.  
Poborski. *Metallurg. Listy, (Prag, Czecho-Slovakia),* 1950, 4, pp. 529-532; [In *Czechoslovakia*]  
... affecting the quality of transformer steels are sur-  
veyed. Production technology and quality tests as used in  
connection with the open hearth electric arc furnace process  
are described with special reference to results obtained in  
recent years in the Molotov Steelworks in Trinec, Czecho-  
slovakia. — P. F.

mi  
P.F.

Po bonil, F.

18  
 Production of transformer steel by a combined method in open-  
 hearth and electric-arc furnaces. K. Hybek and F. Fehon. *Iron*  
~~1956, II, 529-532.~~ Data concerning the effect of different  
 elements on the electromagnetic properties of transformer sheets  
 are presented and the effects of inclusions and gases, and the problems  
 of de-oxidation, discussed. A "combined" process is described in  
 detail. (From English summary.) J.S.C.

2/6

3/6

L 18151-66 EWA(d)/EWP(t)/EWP(k) JD/IW

ACC NR: AP6010380

SOURCE CODE: 02/0034/65/000/005/0337/0344

AUTHOR: Poboril, Frantisek (Engineer; Doctor); Sicha, FrantisekORG: Research Institute for Iron Metallurgy, Prague (Vyzkumny ustav hutnictvi zeleza); Klement Gottwald Vitkovice Iron Works, Ostrava (Vitkovicke zelezarny Klementa Gottwalda)TITLE: New trends in production technology of seamless austenitic steel tubesSOURCE: Hutnicke listy, no. 5, 1965, 337-344TOPIC TAGS: steel, austenitic steel, metal tube, metal machining, metal pressing, ferrite

ABSTRACT: For high pressure modern steam plants economical grades of steel containing an Fe Mn Cr base were developed. A process for production of starting billets for such tubes is described. Ingots weighing 3850 kg are teemed; they are passed through blooming and billet mill without being reheated. 130 mm  $\phi$  cylindrical billets are reduced by machining to 120 mm and cut into 390 mm long slugs. These are heated to 1150-1200°C and pressed in two hydraulic presses into hollow pressings to make seamless tubes. This method in comparison with the old one omits forging and boring of billets; this substantially increases the labor productivity. Two groups of different steel heats were analyzed. Austenitic steel billets should have a good hot workability and a ferrite delta content

less than 3%. Orig. art. has: 7 figures, 11 tables, and 2 formulas. [JPRS]  
 SUB CODE: 13 / SUBM DATE: none / ORIG REF: 007 / OTH REF: 001  
 Card 1/1 vmb



~~FRANZISKA POBOFIL~~, F.

Distr: 4E2c

✓ The metallurgy of austenitic nitrogen-alloyed chromium-manganese and chromium-manganese-nickel steels: František Pobořil and Marcela Zerklová (Státní výzkumný ústav hutnictví železa, Prague). Hutnické listy 13, 069-70 (1958).—On lab. high-frequency melts of austenitic N-alloyed Cr-Mn steels it was experimentally detd. that the N content of corresponding soly. in steel of given chem. compn. is the limiting content in equil. conditions to obtain sound ingots or castings without blowholes and inaccessible segregations. The melt results confirmed that the great excess of added N in comparison with the content of sol. N causes, in equil. conditions, formation of blowholes in ingots and castings on the one hand and larger and irregular losses of added N on the other hand. The soly. of N in melted Cr alloys increases with decreasing temp. 25 references.

Petr, Schindler

4  
1-94

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FRANTIŠEK POBOŘIL

Distr: 4E2c

The constitution of austenitic steels intended for service at elevated temperatures. František Pobořil and Marcela Zedlová (Výzkumný ústav hutnický, Praha). ~~Hutnické listy 13, 1061-8 (1958).~~—On the basis of an analysis of the dependence of ferrite content following quenching from the temp. of the max. range of  $\gamma$ -phase in austenitic Ni-Cr steels on the equiv. of Cr at a practically const. equiv. of Ni, the supposition was derived that in order to express quantitatively the dependence of ferrite content in austenitic steels on the chem. compn., it would be necessary to insert the activities of individual alloying elements instead of concns. into the equations derived. 32 references.

Petr. Schneider

mm  
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4  
1-84  
1

POBORIL, F.

Knotek, M; Zezulova, M. Contribution to the constitution of austenitic Mn-Cr and Cr-Ni steels for service at high temperatures. p.725.

HUTNICKE LISTY, Brno, Vol. 10, no. 12, Dec. 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 5, No. 6 June 1956, Uncl.

Z/034/62/000/004/003/005  
E073/E335

AUTHOR: Pobořil, F.

TITLE: Mastering the manufacture and fabrication of economy austenitic heat-resistant steels MnCrV (17 482) and MnCrMoV (17 483)

PERIODICAL: Hutnické listy, no. 4, 1962, 295

TEXT: Concluding report dealing with mastering the manufacture of economy austenitic heat-resistant steels MnCrMoV 17/7 (17 483) in electric-arc furnaces at VZKG and mastering the manufacture of seamless tubes from these steels at VZKG and VTŽ, Chomutov. A new technology was developed of manufacturing semis for the production of seamless tubes. According to this technology, the heats are utilized for teeming roll-mill ingots, type VI A, weighing about 3 700 kg, which are rolled into blooms of 130 mm diameter. These are rough-machined and split into blocks which are used for making hollow pressings with a bottom. Seamless tubes are rolled from these by current methods. On the basis of experience

Card 1/2

Mastering the manufacture ....

Z/034/62/000/004/003/005  
E073/E335

gained during development of this method of manufacture, detailed technological specifications were worked out for the manufacture of both steels in electric-arc furnaces, for the rolling of ingots into blooms, for the rough-machining and cutting of blooms, pressing the hollow presslings and the manufacture of seamless tubes. The further part of the concluding report contains results of metallographic and mechanical tests, including creep-fracture tests, by means of which the mechanical values for both these steels, given in the works standards of VŽKG (material-property sheets), were verified. An analysis is given in the concluding part of the report of the economic effect of introducing the manufacture of these two steels, 17 482 and 17 483, into the metallurgical industry. Report of Výzkumný ústav hutnictví železa (Iron and Steel Research Institute).

[Abstracter's note: this is a complete translation.]

Card 2/2

67012

CZECH/34-59-10-7/25

18.1150

AUTHOR : František Pobořil, Engineer, Doctor

TITLE: Development of Austenitic High-temperature and Stainless CrMn Economy Steels<sup>a</sup> for the Manufacture of Seamless Tubes

PERIODICAL: Hutnické Listy, 1959, Nr 10, pp 861-863

ABSTRACT: The author describes the results obtained in Czechoslovakia with CrMn economy steels developed for manufacturing superheater tubes which have to withstand the effect of superheated steam and of combustion gases. The development of austenitic economy steels began in Czechoslovakia in the Vitkovice Steel Works in 1949. MnCr steels were alloyed with up to 0.25% N and stabilization was effected by means of Nb and Ta. The creep strength at 650-700 °C practically equalled that of austenitic Cr-Ni (Ta, Nb) 16/13 steel. Due to the great shortage of Ta and Nb in Czechoslovakia, further research work was carried out for developing titanium stabilized Mn-Cr steels, Mn-Cr (Ti) 17/7 (steel 17481 of the Czechoslovakian standard specification). The heat conductivity of this steel is about 22 kcal/m °C hour in the temperature range 300-550 °C, which is considerable compared to the published values for.

Card  
1/5

67012

CZECH/34-59-10-7/25

Development of Austenitic High-temperature and Stainless Cr-Mn Economy Steels for the Manufacture of Seamless Tubes

austenitic steels. According to the test results of B. Přenosil (Ref 10) this steel resists oxidation in superheated steam of 180 atm up to the temperatures 610-630 °C, and up to 660 °C it resists oxidation in a medium consisting of flue gases with a low content of sulphur and a relatively high content of water vapour. According to the results of Přenosil and the author of this paper, in the air the steel resists oxidation up to 740-800 °C. In Fig 2 the creep strength of this steel is plotted for durations of 10 000, 25 000 and 100 000 hours. For temperatures above 620 °C and durations exceeding 100 000 hours the values are extrapolated by means of the Larson-Miller parameter. This Mn-Cr (Ti) 17/7 steel is suitable for tubes in forgings intended to operate at a maximum temperature of 620 °C, i.e. for superheated tubes (560 °C) up to 180 atm. For higher steam parameters a further austenitic high-temperature Mn-Cr-V 17/10 economy steel was developed; the pilot plant development of this steel was carried out in the Witkovice Steel Works in cooperation with the

Card  
2/5

67012

CZECH/34-59-10-7/25

Development of Austenitic High-temperature and Stainless Cr-Mn Economy Steels for the Manufacture of Seamless Tubes

Ferrous Metallurgy Research Institute. This steel contains about 0.10% C, 18% Mn, 10% Cr, 0.60% V. It has stable austenitic structure in the temperature range of technological processing as well as in the range of operating temperatures under consideration. According to the test results of B. Prenosil, the Mn-Cr-V 17/10 steel withstands oxidation under the effect of steam superheated to 700 °C (180 atm); inside combustion products with a high content of water vapour it withstands oxidation up to 750°C and in air it restricts oxidation even above 750 °C. The high temperature stability of the Mn-Cr-V steel was determined by long-run creep tests until failure at 650, 700 and 750 °C for a laboratory 100 kg melt produced in a h.f. furnace, two pilot plant electric arc melts weighing 0.5 tons and one electric arc melt weighing 4 tons. The longest test so far (5 kg/mm<sup>2</sup>, 700 °C) was carried out for a duration of two years and one month; the obtained results are graphed in Fig 3, p 862. On the basis of these results creep strength data as a function of temperature for 10 000, 25000 and 100 000 hours are graphed in Fig 4. This economy

Card  
3/5



67012

CZECH/34-59-10-7/25

Development of Austenitic High-temperature and Stainless Cr-Mn Economy Steels for the Manufacture of Seamless Tubes

austenitic steel has a very high ductility under creep conditions, it has very high values of extension and contraction during fracture and these values drop little with increasing times to failure. It was established that this steel is suitable for forgings and tubes intended to operate at material temperatures up to 675 °C, i.e. for superheater tubes of high parameter steam of 600-625 °C. In the graph of Fig 5 the properties of the here-described economy steels with austenitic Cr-Ni steels are compared. As regards creep strength the Czech Mn-Cr-V 17/10 steel is equal to the American steel AISI 347 or 348. In the Research Institute for Shaping Metals in Zwickan (East Germany) the possibility has been confirmed of producing seamless tubes from the Mn-Cr-V 17/10 steel by extrusion in the hot state. Welding technology for superheater tubes made of this steel is being developed at the Welding Research Institute in Bratislava. Jointly with the Witkovice Steel Works, VTZ Chomutov and TŽ VŘSR, the research institute of the author is developing stainless

Card  
4/5

67012

CZECH/34-59-10-7/25

Development of Austenitic High-temperature and Stainless Cr-Mn  
Economy Steels for the Manufacture of Seamless Tubes

and heat-resistant FeCrMnN steels which will enable  
saving of nickel.

Card  
5/5

There are 5 figures and 13 references, of which 8 are  
German and 5 Czech.

ASSOCIATION: Výzkumný ústav hutnictví železa, Praha  
(Ferrous Metallurgy Research Institute, Prague)

SUBMITTED: June 1, 1959

4

67102

CZECH/34-59-12-25/44

18.1150

AUTHOR: Pobořil, František, Engineer Doctor

TITLE: Development of Low Cost Austenitic Creep Resisting Steels<sup>18</sup>  
in Czechoslovakia

PERIODICAL: Hutnické listy, 1959, Nr 12, pp 1121-1125

ABSTRACT: Paper presented at the "Symposium on Problems of Development of Creep-Resisting Materials",  
Mariánské Lázně, September 11-13, 1959. Section III.  
Since 1949 the research and development of austenitic  
creep resisting steel in Czechoslovakia covered not only  
Cr-Ni steels but also Ni free Cr-Mn steels. In the case  
of the latter type of steel the aim was to balance the  
content of chromium and other ferrite forming elements  
with the manganese content so as to obtain a stable  
austenitic structure, both at operating and at annealing  
and hot working temperatures and to eliminate the  
tendency to formation of  $\sigma$ -phase<sup>or</sup>  $\delta$ -ferrite. Up to now  
the following steels of this type have been developed:  
manganese-chromium-nitrogen (tantalum-niobium) 17/10  
(N 7430); manganese-chromium (titanium) 17/7 (CSN 17481);  
manganese-chromium-vanadium 17/10; manganese-chromium-  
molybdenum-vanadium 17/7. The compositions of these steels

Card 1/3

67102

CZECH/34-59-12-25/44

Development of Low Cost Austenitic Creep Resisting Steels in  
Czechoslovakia

are entered in Table 1, p 1121. Oxidation and corrosion tests in atmospheres of air, combustion gases and superheated steam have shown that the growth of oxide layers on austenitic Fe-Cr-Mn-base steels obeys essentially the parabolic law. However, the temperature dependence of the oxidation rate differs from that of chromium and Cr-Ni steels and is characterized by a sharp rise which sets in from a certain "critical" temperature onwards, which depends on the compositions of the steel and the oxidation medium. The creep resistance has been determined on laboratory, pilot plant and full scale production melts for test durations up to 20 000 hours, which have been extrapolated to 100 000 hours by means of the Larson-Muller parameter using constant C values, which were calculated for each type of steel. The production technology has been developed and tested on a full production scale for seamless tubes. Argon arc welding of superheater tubes using Mn-Cr-Mo (niobium) 17/7 filler material has been developed and is being used under shop and erection conditions for the Mn-Cr (Ti) 17/7 steel. 4

Card 2/3

67102

CZECH/34-59-12-25/44

Development of Low Cost Austenitic Creep Resisting Steels in  
Czechoslovakia

Arc welding electrodes and welding technology of low alloy ferritic steels to austenitic steels are at present in the stage of development. Furthermore, Fe-Cr-Mn-N-base stainless and creep resisting austenitic steels for casting and forging and alloyed with further additional elements are also in the process of development in Czechoslovakia.

There are 5 figures, 3 tables and 25 references, 10 of which are Czech, 8 German, 6 English and 1 Soviet.

ASSOCIATION: Výzkumný ústav hutnictví železa, Praha  
(Ferrous Metallurgy Research Institute, Prague)

4

Card 3/3

✓ On the Structure of Austenitic Mn-Cr and Cr-Ni Steels Used at High Temperatures. F. Pobeňil, M. Knotek, and M. Lezníková. (Hutnicki Listy, 1955, 10: (12), 725-737). (In Czech). The positions of technical Fe-Mn-Cr and Fe-Cr-Ni steels (stabilized with Ta, Nb, Ti, and V) in the ternary phase diagram were determined, and the extent of the gamma domain ascertained. The positions of the phase boundaries were checked by long time anneals of the steels at 800° C which, for those including the sigma phase, resulted in embrittlement. Equations for the conversion of alloy contents to Mn, Cr or Ni "equivalents" are given. By their use three types of economical stabilized Mn-Cr steels were developed.

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3

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POBORIL, Frantisek

Determination of the Suitability of Low-Carbon Steels for Fusion Welding. (In Czech). Frantisek Poboril and Frantisek Sicha, Hutnicke Listy, v. 5, Jan. 1950, p. 5-9; Feb. 1950, p. 57-61; Mar. 1950, p. 101-105.

On the basis of experimental evidence showing that in fusion welding, a sudden cooling down of certain low-carbon steels from temperatures in the vicinity of the  $A_{c1}$  point results in a brittle zone in the transition range, a fusion-weldability test for steels was suggested. It consists in the quenching of a rough-machined impact-test specimen from a temperature just below the  $A_{c1}$  point, artificial aging at 100°C. for two hours, and determination of impact strength at the normal temperature. Includes tables and micrographs.  
(Immediate source clipping)

POBORIL, F.

8  
①

B. T. R.  
V. 3 No. 3  
Mar. 1954  
Metals- Heat  
Treatment

3758\* Heat Treatment of Gears by the ACI Surface  
Hardening Process. (Czechoslovakian.) V. F. Poboril, Hutnické  
Listy, v. 8, no. 9, Sept. 1953, p. 450-454.  
Method consists of isothermic hardening of gears made from  
practically eutectic low-alloyed steels after heating in a salt  
bath. Tables, graphs. 4 ref.



POBORJI, F.

"Present Trends in the Development, Production, and Use of Alloy Construction Steels." p. 158 (Hutník, Vol. 3, no. 7/8, Aug 1953, Praha)

SO: Monthly List of East European Accessions, Vol. 3, no. 2, Library of Congress, Feb. 1954, Uncl.

POBORIL, F.

POBORIL, F., SICHÁ, F.

"Examining the Natural Aging Process and Application of the Weldability of Steel;"

p. 158.

(Hutnicke Listy, Vol.6, No.4, Apr. 1951, Brno.)

SO: Monthly List of East European Accessions, Vol.2, No.9, Library of Congress, September 1953, Uncl.

POBORNI M.

Activities of the Research Institute of the Steel Industry in the Five-Year Plan.  
P. 158.

SO: East European Accessions List, Vol. 5, No. 9, Sept. 1954, Lib. of Congress

POBORIL, F.

"Heat treatment of gears by the surfacehardening process AC1" p.450. (Hutnicke Listy Vol. 8, no. 9, Sept. 1953. Brno)

SO: Monthly List of East European Accessions, Vol. 3, No. 2, Library of Congress, Feb. 1954, Uncl.

POBORIL, F.

Journal of the Iron and Steel Institute  
Vol. 176  
Apr. 1954  
Properties and Tests

(1)  
Modern Trends in Development, Production, and Use of  
Low-Alloy Steels. F. Poboril. *Havník (Prague)*, 1953, 8,  
(7-8), 188-190. [In Czech]. The composition, hardenability,  
temper brittleness, and the relation of microstructure to  
strength are discussed, and reference is made to recent work  
on producing high quality alloy steels by the open-hearth  
process.—F. V.

POBORIL, F.

"Activities of the Research Institute of the Steel Industry in the Five-Year Plan." p. 158,  
Brno, Vol. 9, no. 3, Mar. 1954.

SO: East European Accessions List, Vol. 3, No. 9, September 1954, Lib. of Congress

POBORIL, F.

B. T. K.  
V. 3 No. 3  
Mar. 1954  
Metals- Heat  
Treatment

3758\* Heat Treatment of Gears by the AGI Surface Hardening Process. (Czechoslovakian.) F. Poboril. *Hutnické Listy*, v. 8, no. 9, Sept. 1953, p. 450-454.

Method consists of isothermic hardening of gears made from practically eutectic low-alloyed steels after heating in a salt bath. Tables, graphs. 4 ref.

POBORIL, F

Study of natural ageing and application of tests for determining the weldability of steel. P. Poboril and V. Seta. *Metallurgický Listy*, 1951, 6, 735-765; *J. Iron Steel Inst.*, 1951, 169, 398. The effects of prolonged natural ageing and artificial ageing were compared. After natural ageing for 2-10,000 hr., impact tests and measurements of macro- and micro-hardness were made. Steel with a pronounced tendency to brittleness developed full brittleness in 24 hr. after critical heat-treatment (quenching in water from 710°) and remained for 10,000 hr. without any sign of improvement. With killed steel, full brittleness occurred in 500 hr. after critical heat-treatment and there was no improvement after 10,000 hr. To determine whether increase in impact strength values between 5000 and 10,000 hr. indicates an improvement in forging properties, specimens were given 15,000- and 20,000-hr. ageing tests. These showed the existence of pptn.-hardening for low-C steels quenched in water from temp. directly below the Ac<sub>1</sub> point. Simultaneous tests of natural ageing following cold deformation showed that there is a difference between this type of ageing, which results in only a slight increase of hardness, and ageing after quenching in cold water from a temp. directly below the Ac<sub>1</sub> point. Statistical data from weldability tests obtained during current quality control on 125 low-C steel melts showed that ageing after critical heat-treatment and ageing after cold deformation give quite different results for a large no. of the steels. The assumption that a steel has an equal tendency to embrittlement as a result of thermal cycles during welding and as a result of cold deformation is not always correct. In most cases the steels unsuitable for welding were not killed.

R. B. CLARKE.

OK  
MET



~~FRANZISKA~~ TOBORIL, Frantisek

CA

M.D.

Suitability testing of low-carbon steels for fuse-welding. Frantisek Toboril and Frantisek Sicha (Ostrava, Czech.). *Frantisek Sicha* 3, 5-9, 57-61, 101-4 (English summary, 105) (1950).—After a brief review on testing the weldability of steel, P. and S. describe a new test, mainly suitable for use with C and low-alloy steels classified as not suitable for hardening. Particular attention is paid to the phenomena occurring in the transition section of the welded specimen. For the tests carried out information is given on the compn., dimensions, hardness, and heat treatment of the specimens, and on the locations on the sheet from which the specimens were taken. The results obtained show that, in the case of low carbon steels with a tendency to brittleness, rapid cooling starting at a temp. near the  $A_c1$  point is responsible for the brittleness of the transition zone near the weld. Another method, worked out from expts. on the "critical" temp. directly below the  $A_c1$  point

and the influence of aging, consists of quenching the rough, unmachined impact test specimen in water at a temp. directly below the  $A_c1$  point, artificial aging of the finished, machined specimen at  $100^\circ$  for 2 hrs., and detn. of the impact resistance at room temp. The steel is classified as weldable if the impact resistance of all 3 specimens is equal or larger than 3 kg./sq. cm. The test results are compiled in 19 tables and plotted on graphs. The results of regenerative heat treatment of artificially aged specimens is shown on microphotographs. Eugene Gros

of

*Podobity, GRANTISEK*

The constitution of austenitic manganese chromium and  
 chromium-nickel steels for high-temperature service  
 František Poboříl, Miroslav Kocířel and Miroslav Zeman  
 Československý Vysoký Učební Průmysl, Brno, Czechoslovakia  
 The position of austenitic steels in the ternary diagram of the  
 systems Fe-Mn-Cr and Fe-Cr-Ni was determined. A series  
 of austenitic Mn-Cr and Cr-Ni steels stabilized with Ta,  
 Nb, Ti and V by detail of the embrittling degree through  
 the effect of the sigma-phase pptn. after 1000 hrs., annealing  
 at 800°. The position of the steels in the respective ternary  
 diagrams was detd. by means of derived equations for the  
 calcul. of equivs. of the principal alloying elements of both  
 steel categories.

Petr Schneider

*PRO*

POBORIL, F. ✓

Steel Weldability Tests. \*F. Poboril and F. Sicha. (Nutraicke Listy, 1950, vol. 5, Jan., pp. 5-9; Feb., pp. 57-61; Mar., pp. 101-105). (In Czech). The authors review briefly the current methods of testing the weldability of steel and describe in detail a new method based on their own experiments. This method is mainly suitable for carbon and low-alloy steels classified as not suitable for hardening, and particular attention is paid to the phenomena occurring in the transition zone of the welded specimen. The results obtained show that rapid cooling from a temperature near  $A_{c1}$  embrittles the transition zone near the weld in the case of low-carbon steels with a tendency to brittleness. The authors have developed a new weldability test on the basis of further experiments on the influence of the critical temperature just below  $A_{c1}$  and the influence of ageing. It consists of quenching the rough-machined impact test specimen in water from a temperature just below  $A_{c1}$ , artificial ageing of the finish-machined specimen at  $100^{\circ}\text{C}$ . for 2 hrs. and determination of the impact resistance at room temperature. The steel is classified as weldable if the impact resistance of all the three specimens  $> 3 \text{ kg.m./32.cm}$ . The results of regenerative heat-treatment of artificially aged specimens are shown by micrographs. (Immediate source clipping)

Poboril, Frantisek

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH ORDERS																														

8

8847\* A Study of Natural Aging and the Application of Tests for Weldability of Steels. (In Czech.) Frantisek Poboril and Frantisek Sicha. *Hutnické Listy*, v. 8, Apr. 1951, p. 158-165. By long-time tests of natural aging of low-carbon steels quenched in water from just below the A<sub>c1</sub> point, the existence of precipitation hardening was demonstrated. Other tests were made on natural aging following cold deformation. This process resulted in only a small increase in hardness. Statistical evaluation of results of comparative tests on weldability of 125 low-carbon steels showed that aging after thermal treatment and after cold deformation give fundamentally different results for a number of steels. Tables and graphs.

M J

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0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
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PROCESSES AND PROPERTIES INDEX

7

**Molecular components in liquid steel and their influence on desulfurization equilibria. P. HIRASTANSKI and V. SIVANAN, (Ind. Chem. Chem. Comm., 1968, 5, 201-202). Kinodynamic considerations offered evidence for the equilibrium Fe-Si-O-FeO. Only the Fe-Si bond was in desulfurization process. Analysis of the lowest FeO during the formation of the Fe-Si bond. D. R. D.**

METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

COMMON ELEMENTS

COMMON VARIABLES INDEX

GROUPS

LETTERS

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

~~FRANTIŠEK~~, POBOŘIL, František

6000

V 5197\* Constitution of Austenitic Mn-Cr and Cr-Ni Steels for High-Temperature Service. Příspěvek ke konstituci austenitických ocelí Mn-Cr a Cr-Ni pro službu za vyšších teplot. (Czech.) František Pobořil, Miroslav Kňoupek, and Marcela Zuzulová. *František listy*, v. 10, no. 12, Dec. 1955, p. 725-737.

MG Degree of embrittlement caused by  $\sigma$  phase precipitation was determined on steels stabilized with Ta, Nb, Ti, or V. The position of the examined steels in the respective ternary diagram was determined by means of derived equations for the calculation of equivalents of the principal alloying elements of both steel categories. Graphs, micrographs, tables.

DJ [signature]

POBORIL, F.  
P. HERASYMENKO, Chim. et Ind., 1933, 29, spec. No., 649-645

POBORIL, FRANTISEK

934\* (Czech.) The Production of Transformer Steel by a  
Combined Method in Open-Hearth and Electric-Arc Furnaces. 2  
Výroba transformátorové oceli kombinovaným způsobem v  
marinově a elektrické obloukové peči. Karel Hýbek and  
František Pobořil. Hutnické Listy, v. 11, no. 9, Sept. 1958,  
p. 529-532.

The influence of different elements on electromagnetic proper-  
ties of transformer sheets.



Pobol', L.D.

PERTSEV, B.N., doktor istoricheskikh nauk, akademik; TARASENKO, B.P.;  
PETROV, L.K.; KONOPEL'KO, I.A.; POBOL', L.D.

Book about ancient Russian glass. ("Glassmaking in ancient Russia"  
by M.A. Bezborodov. Reviewed by V.N. Pertsev and others). Stek. 1  
ker. 14 no.9:31-32 S '57. (MIRA 10:10)

1.AN BSSR (for Pertsev).  
(Glass manufacture--History)  
(Bezborodov, M.A.)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

PROCESSES AND PROCEDURES INDEX

CA

A thermodynamic study of the form which silicon takes in liquid iron. E. Polakoff. *Chem. Abstr.* 14, 493. English résumé (1939).—From a thermodynamic analysis of the liquid and solid boundary curves of a phase diagram for binary alloys of Fe and Si in which Fe is the predominant component, it becomes evident that if the alloy contains more than 2.86% Si, the Si in the liquid phase is dissolved completely in the form of FeSi, while the Si in the solid phase is dissolved in an atomic form. In alloys contg. less than 2.86% Si, the FeSi alloy remains partly, if not completely, dissociated. Frank Marash

Common Elements

Metals

Alloys

Metallurgical Literature Classification

Alphabetical Index

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

ca

9

The constitution of the iron-carbon-silicon system. II. Section through the tri-dimensional diagram at 8% silicon. A. K&I and F. POMERIL. *Collection Czechoslov. Chem. Comm.* 3, 61 72(1931); cf. C. A. 24, 3705. The properties of 7 alloys were investigated. These alloys were prepd. by melting in an elec. resistance furnace. The percentage chem. compn. of the alloys tested is:

Alloy No.	C	Mn	Si	P	S	Ac <sub>1</sub> in degrees
34	0.14	0.43	7.97	0.041	0.011	845
35	0.21	0.31	7.87	0.045	0.011	800
36	0.34	0.40	7.63	0.042	0.015	845
37	0.70	0.48	8.12	0.038	0.016	850
38	0.88	0.38	7.04	0.042	0.024	850
39	1.88	0.48	7.45	0.052	0.024	865
40	2.7	0.55	7.84	0.097	0.009	865

Samples for thermal analysis and microscopic examn. after heat treatment were taken from each alloy. The constitutional diagram of the ternary Fe-C-Si system contg. 8% Si is given. The region of the homogeneous  $\gamma$ -phase does not exist in these alloys. The pearlitic transformation of the alloys with more than 0.48% C ends at the beginning of melting. The transformation Ac<sub>1</sub> in the alloys with 8% Si lies in the region  $\alpha + C$  at 865°.

G. T. Moroz

ASME-SIA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES INDEX

*ca*

**Molecular compounds in liquid steel and their influence on the deoxidation equilibria.** P. Hetasymenko and E. Poljaki. *Collection Czechoslov. Chem. Communications* 5, 311-3(1970).—A thermodynamic study of the Fe-Si (3) system. Investigation of the liquidus-solidus curves of the Fe-Si system near the m. p. of Fe shows that Si dissolved in Fe is mainly in the form of FeSi. But only at Si can take part in the deoxidation:  $2FeO + Si = 2Fe + SiO_2$ . Further, if Mn is present it will combine with some of the Si to form  $Mn_xSi$  (where x is probably 2 or 3). The authors conclude, therefore, that the deoxidizing effect of Si in liquid steel contg. Mn is considerably lower than in steel without Mn. This is confirmed by exptl. data taken from various sources. Bibliography.

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John E. Millery

ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

CA
9

**Molecular compounds in liquid steel and their influence on the decarburization equilibria.** P. Hirasymenko and J. Polajcik. *Collection Czechoslov. Chem. Communications* 5, 1075 (1970). - A thermodynamic study of the Fe-Si-O system. Investigation of the liquidus-solidus curves of the Fe-Si system near the m. p. of Fe shows that Si dissolved in Fe is mainly in the form of FeSi. But only at Si can take part in the decarburization:  $2FeO + Si \rightarrow 2Fe + SiO_2$ . Further, if Mn is present it will combine with some of the Si to form  $Mn_3Si$  (where x is probably 2 or 3). The authors conclude, therefore, that the decarburizing effect of Si in liquid steel contg. Mn is considerably lower than in steel without Mn. This is confirmed by exper. data taken from various sources. Bibliography.

John E. Millery

ASB-514 METALLURGICAL LITERATURE CLASSIFICATION

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RECORD #	SEARCHED	SERIALIZED	INDEXED	FILED	DATE	BY	CLASS.

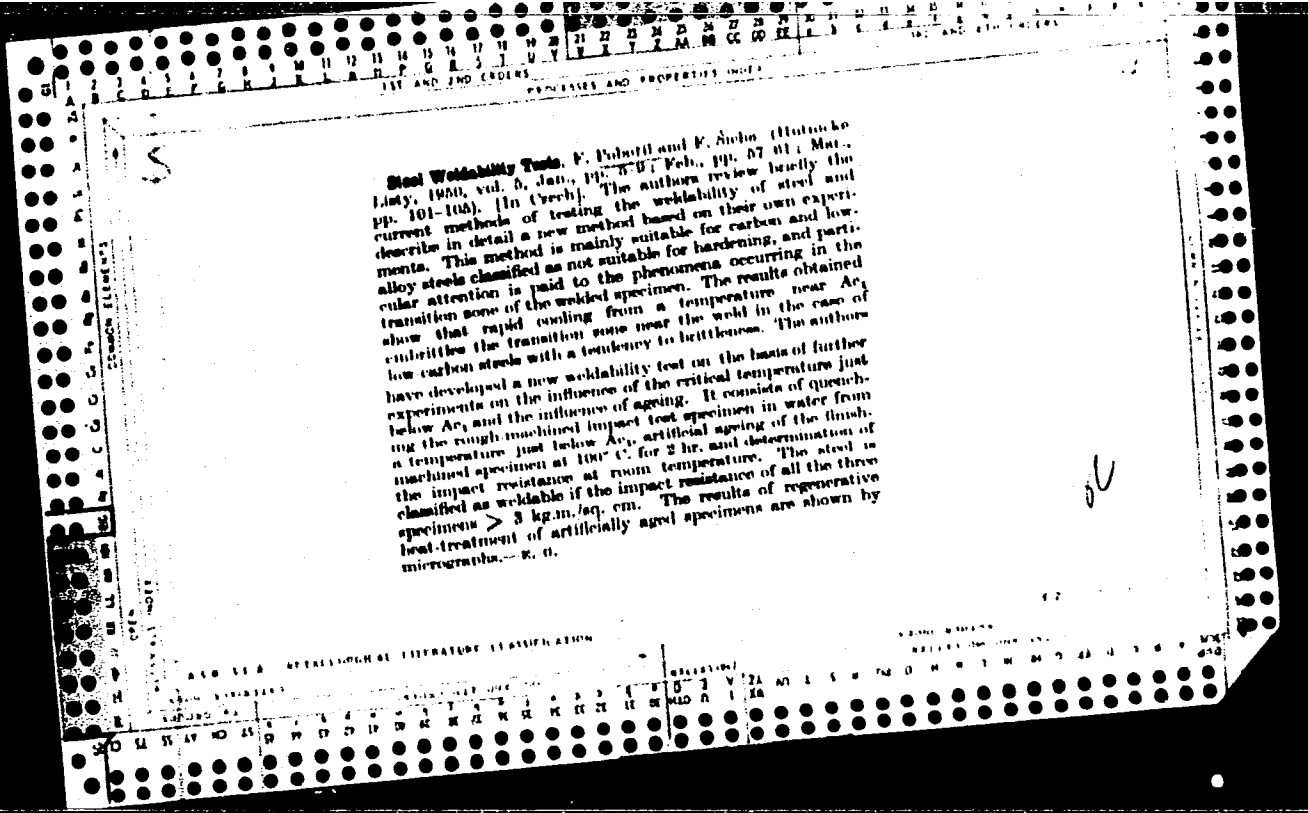
PROCESSES AND PROPERTIES INDEX

The four-phase plane in the iron-carbon-silicon systems. F. DAMONIL. *Chem*  
*(Abstr. 8, 22-4 (in English 24) 1933).*—When the projections of the equil. lines on the  
 concn. plane experimentally detd. by Satō (*C. A.* 25, 4506) were compared with those  
 deduced by Scheil (*C. A.* 23, 5459) disagreement between the authors concerning the  
 orientation of the four-phase plane was revealed.  
 JAROSLAV KUČERA

METALLURGICAL LITERATURE CLASSIFICATION

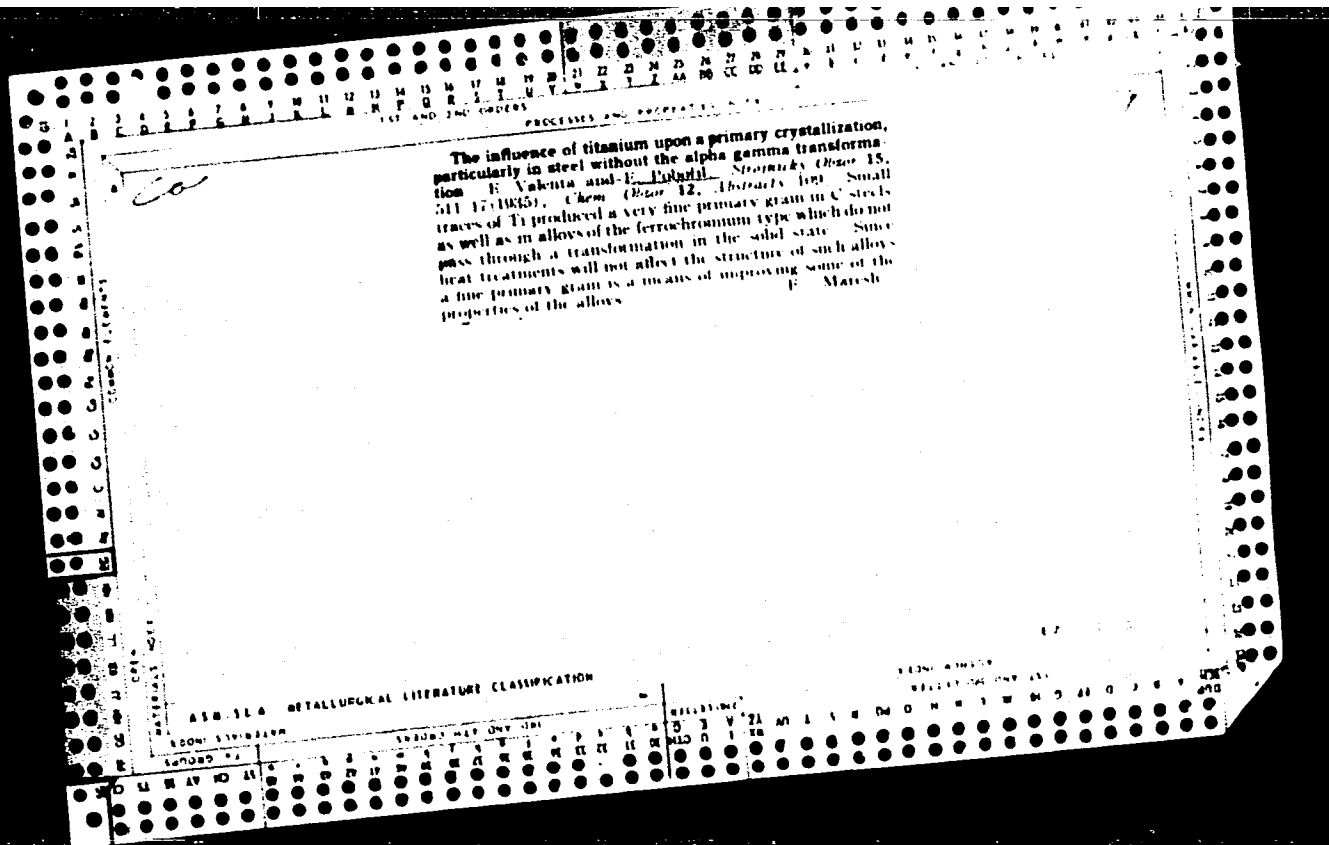
BM

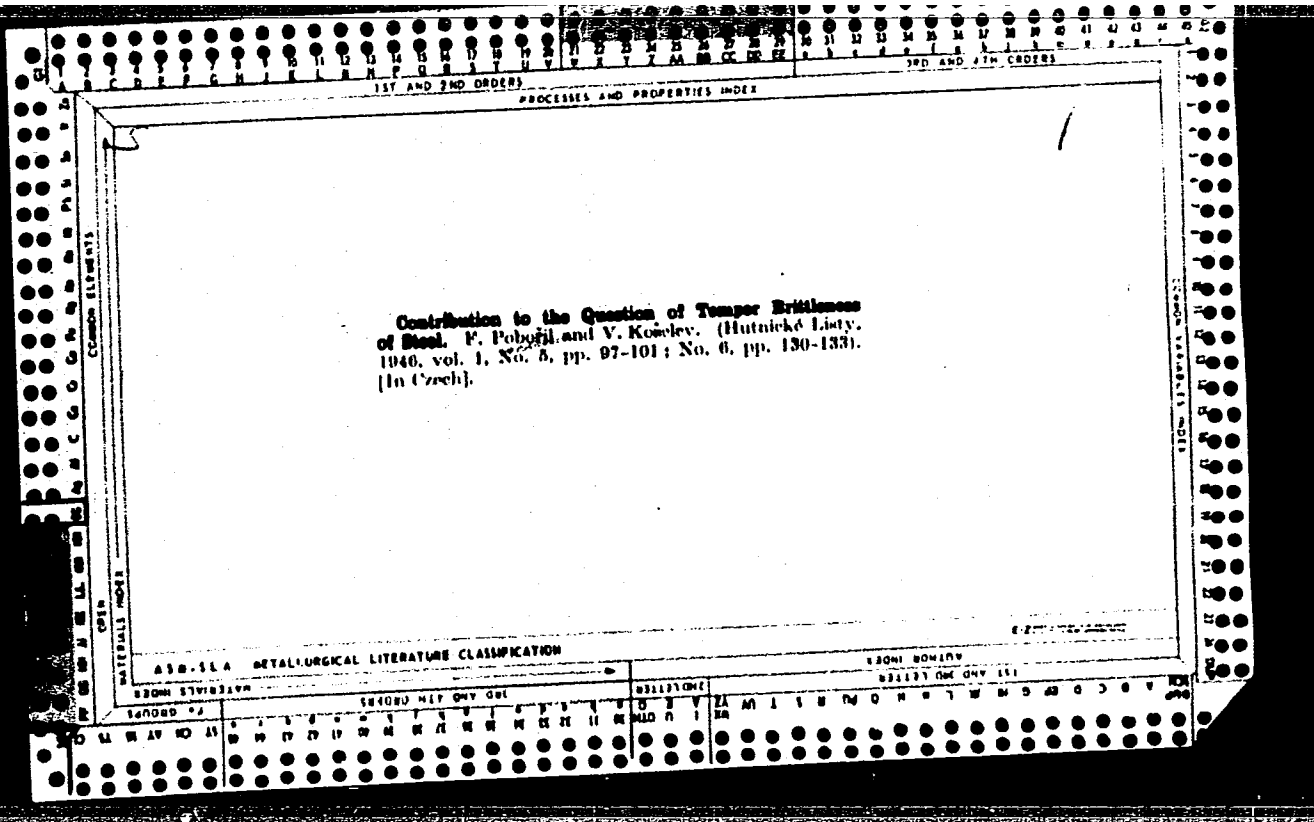
Study of natural aging and application of tests for determining the  
 weldability of steel. F. Pichler and F. Licha (*Metallurgische Zeitschrift*, 1961,  
 6, 188-190; *J. Iron Steel Inst.*, 1961, 200, 368).—The effects of  
 prolonged natural aging and artificial aging were compared. After  
 natural aging for 3-10,000 hr., impact tests and measurements of  
 macro- and micro-hardness were made. Steel with a pronounced  
 tendency to brittleness developed full brittleness in 24 hr. after  
 critical heat-treatment (quenching in water from 710°) and remained  
 for 10,000 hr. without any sign of improvement. With killed steel,  
 full brittleness occurred in 200 hr. after critical heat-treatment and  
 there was no improvement after 10,000 hr. To determine whether  
 increase in impact strength values between 2000 and 10,000 hr. indi-  
 cates an improvement in forging properties, specimens were given  
 18,000- and 20,000-hr. aging tests. These showed the existence of  
 pctn.-hardening for low-C steels quenched in water from temp. directly  
 below the  $A_c1$  point. Simultaneous tests of natural ageing following  
 cold deformation showed that there is a difference between the type of  
 ageing, which results in only a slight increase of hardness, and ageing  
 after quenching in cold water from a temp. directly below the  $A_c1$   
 point. Statistical data from weldability tests obtained during current  
 quality control on 125 low-C steel units showed that ageing after  
 critical heat-treatment and ageing after cold deformation give  
 quite different results for a large no. of the steels. The assumption  
 that a steel has an equal tendency to embrittlement as a result of  
 thermal cycles during welding and as a result of cold deformation is  
 not always correct. In most cases the steels unsuitable for welding  
 were not killed. R. B. CLARK.



**Steel Weldability Tests.** F. Fubelli and V. Anon. (Helsinki July, 1960, vol. 6, Jan., pp. 8-11; Feb., pp. 57-61; Mar., pp. 101-106). [In Czech]. The authors review briefly the current methods of testing the weldability of steel and describe in detail a new method based on their own experiments. This method is mainly suitable for carbon and low-alloy steels classified as not suitable for hardening, and particular attention is paid to the phenomena occurring in the transition zone of the welded specimen. The results obtained show that rapid cooling from a temperature near  $A_c1$  embrittles the transition zone near the weld in the case of low carbon steels with a tendency to brittleness. The authors have developed a new weldability test on the basis of further experiments on the influence of the critical temperature just below  $A_c1$  and the influence of ageing. It consists of quenching the rough machined impact test specimen in water from a temperature just below  $A_c1$ , artificial ageing of the finished specimen at  $100^\circ C$  for 2 hr, and determination of the impact resistance at room temperature. The steel is classified as weldable if the impact resistance of all the three specimens  $> 3 \text{ kg.m./sq. cm}$ . The results of regenerative heat-treatment of artificially aged specimens are shown by micrographs.—R. G.







PROCESSES AND PROPERTIES

A-9

**System Fe-C-Mn. II. Section through the**  
 tridimensional diagram at 0% Mn. A. Kikl and  
 F. Tipler (Zell. Metall. Chem. Ges., 1961, 3, 61-  
 75). Previous work (II, 1959, 1961) has been  
 extended to alloys containing 0% and 0.14-  
 0.7% Mn. Minimum of the alloy content from 0 to 0%  
 causes the disappearance of the homogeneous  $\gamma$  phase,  
 of the three-phase  $\gamma$ - $\delta$ - $\epsilon$  liquid region, and of  
 the  $\gamma$ - $\delta$  and  $\gamma$ - $\epsilon$  liquid regions. The peritectic  
 transformation of alloys containing more than 0.05%  
 C shifts toward smaller temperatures. An invariant  
 point occurs at 1180°. The  $\gamma$  edge of the four-phase  
 plane which touches the three-phase ( $\gamma$ ) region lies  
 between 0 and 0% Mn, and the  $\epsilon$  edge, which touches  
 the homogeneous  $\delta$  region, lies above 0% Mn. The A2  
 transformation in alloys containing 0% Mn occurs at  
 650° in the  $\delta$ - $\epsilon$  region. (1961) E. F. GILLER

ASS.SLA METALLURGICAL LITERATURE CLASSIFICATION

FROM SYMBOLS

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Metallographic study of transformations in nickel-chromium steels. V. Kozlov and F. Pomoln. (Coll. Czech. Chem. Comm., 1934, 6, 107-115).—Photomicrographs illustrate the effect of rate of cooling on the structure of the alloy steels. D. R. D.

ASS-51A METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED	INDEXED	SERIALIZED	FILED

B-I-5

BC

Thermodynamic study of the form of silicon dissolved in liquid iron. F. Posokh. (Chem. Zhur., 1959, 16, 40-43).—In alloys containing >2.66% Si the Si is present, at the temp. of solidification, in the liquid phase as FeSi, and in the solid phase in the  $\alpha$  state. With alloys containing less Si, FeSi is present in the melt until it is completely dissociated. F. R.

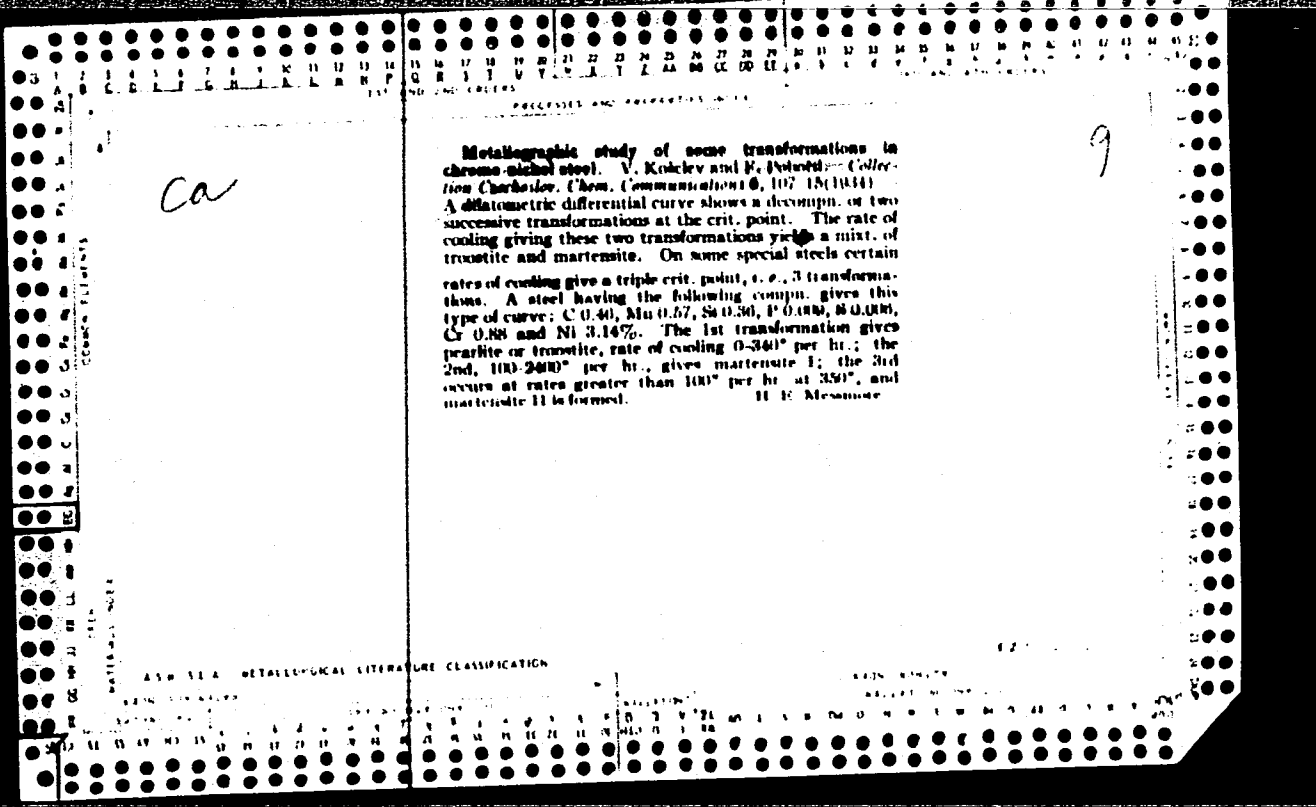
ABB-51A METALLURGICAL LITERATURE CLASSIFICATION

EDOH STWSDIAPV

EDOH BOWZIV

EDOH STWSDIAPV

EDOH BOWZIV



16

**TEMPER BRITTLENESS.** F. Peberil and V. Kocolev. (Iron and Steel, 1948, vol. 21, June, pp. 289-284; July, pp. 319-322). This is an English translation of a paper which appeared in Hutnicke Listy, 1946, vol. 1, No. 5, pp. 97-101; No. 6, pp. 130-133; No. 7, pp. 158-166. The authors distinguish between "permanent" and "temporary" temper brittleness; a steel has permanent temper brittleness when the brittleness is not removed by changes in the rate of cooling after tempering. The results of impact tests at +20° C and -78° C on low alloy steels tempered at various temperatures and of explosive tests on a heat treated chromium-nickel-vanadium steel are presented and discussed. In the latter test charges up to 5.25 g of explosive were electrically fired in small piston-like specimens and the type of deformation or fracture designated by number. It was found that the impact resistance in both ordinary and explosive tests of steels prone to permanent temper brittleness, and of equal tensile strength, increases with rising tempering temperature; there was also a linear relation between the resistance to explosion and the

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LIST AND INDEX

PROCESSES AND PROPERTIES INDEX

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Temper brittleness of steel. Fr. Polakil and V. Koš-  
lev (Škodovy Závody, Píseň, Czechoslovakia). *Hutnické  
Listy* 1, 97-101, 130-3(1946), 155-8(1947). A survey  
of lab. tests and practical experience shows that in steels  
showing a permanent temper brittleness, impact resistance  
as well as explosive toughness increases with increasing  
temp., provided the same tensile strength is maintained.  
At low temps.  $-78^{\circ}$ , a linear relationship exists between  
explosive toughness and impact resistance. T. G.

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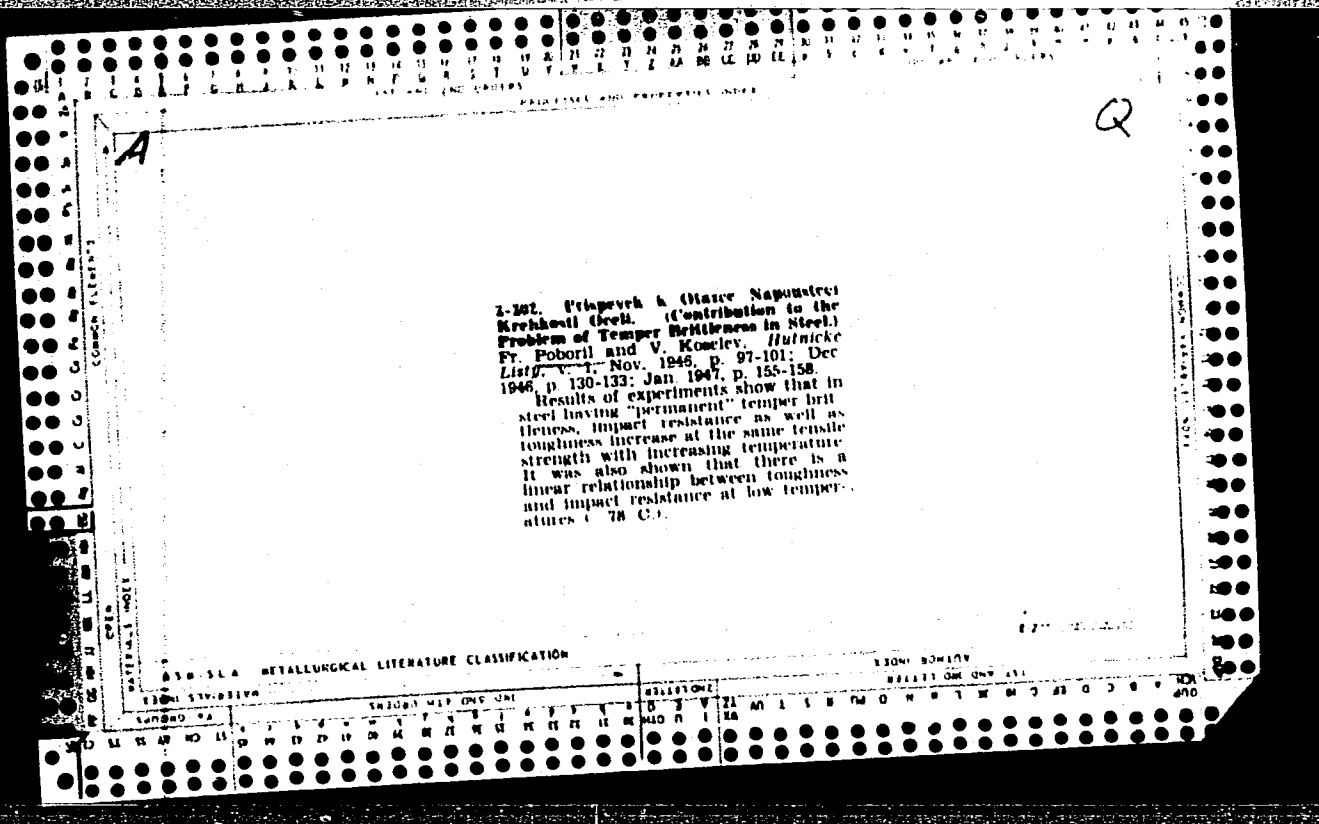
ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

SECTIONAL INDEX

SECTIONAL INDEX





3

**Temper Brittleness; Some Results of Notched-Bar Impact and Explosion Tests.** Fr. Poboril and V. Koslev. *Iron and Steel*, v. 21, June 1948, p. 289-294; July 1948, p. 319-322. Translated from *Hutnické Listy (Metallurgical Topics)*, v. 1, Nov. 1946, p. 97-101; Dec. 1946, p. 130-133; Jan. 1947, p. 155-159.

Previously abstracted from original source under title: "Contribution to the Problem of Temper Brittleness in Steel."

METALLURGICAL LITERATURE CLASSIFICATION

A10.11A

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

13

**\*84. Contribution to the Problem of Temper Brittleness in Steel.** (In Czech) Fr. Pobjiril and V. Kuselev. *Hutnické Listy*, v. 1, Nov. 1946, p. 97-101; Dec. 1946, p. 130-133; Jan. 1947, p. 155-158.

Results of experiments, which are tabulated and charted, show that in steel having "permanent" temper brittleness, impact resistance, as well as toughness, increases at the same tensile strength with increasing temperature. It was also shown that there is a linear relationship between toughness and impact resistance at low temperatures ( $-78^{\circ}\text{C}$ ). Results are tabulated and charted.

ASME-ISA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS  
COMMON VARIABLES INDEX  
MATERIALS INDEX  
PROCESS AND PROPERTIES INDEX

