S/126/61/012/005/007/028
E025/E435

AUTHORS: Bogachev, I.N., Mel'nikova, V.I.

TITLE: Kinetics of ordering in the alloy Ni_3Mn

PERIODICAL: Fizika metallov i metallovedeniy, v.12, no.5, 1961, 678-684

TEXT: The ordering kinetics of the phase Ni_3Mn are studied by measuring the changes in electrical resistivity, saturation magnetization and coercive force during the isothermal annealing of the completely disordered alloy at temperatures below the critical ordering temperature T_c. It is shown that in each case the changes take place in two stages. Resistivity initially increases slightly then decreases rapidly; the saturation magnetization first increases rapidly with subsequent fall-off of the rate of increase; the coercive force rises sharply after an initial static period. In all three cases, the rate of ordering is greatest for the specimens in the range 450 to 475°C, some 60°C below T_c. The two stages of ordering are discussed in terms of the initial growth of nuclei as antiphase domains, and the subsequent growth and coagulation of these domains. It is suggested that in the temperature range 450 to 475°C, conditions

Card 1/2

are the most favourable for nucleation of the ordered phase and thus the approach to the fully ordered state occurs at the greatest rate. There are 6 figures and 17 references: 3 Soviet-bloc and 14 non-Soviet-bloc. The four most recent references to English language publications read as follows:

Ref.13: Burns F.P., Quimby S.L. Phys. Rev., v.97, 1955, 6;
Ref.14: Lord N.W. J. Chem. Phys., v.21, 1953, 692;
Ref.15: Feder R., Moony M., Nowick A.S. Acta met., v.6, no.4,1958;
Ref.16: O'Brien J.L., Kuczynski G.C. Acta met., v.7, no.12,1959, 803.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M.Kirova (Ural Polytechnical Institute im. S. Kirov)

SUBMITTED: March 6, 1961

S/126/61/012/005/006/028
E025/E435

AUTHORS: Yershova, L.S., Bogachev, I.N., Shklyar, R.S.

TITLE: The effect of deformation on the formation of ε-phase in manganese steels

PERIODICAL: Fizika metallov i metallovedeniy, v.12, no.5, 1961, 670-677 + 1 plate

TEXT: The kinetics of formation of ε-phase and the effects of plastic deformation of the $\gamma \rightarrow \varepsilon$ transformation are studied in a series of C-Mn-Ni steels. In a 20% Mn steel the $\gamma \rightarrow \varepsilon$ transformation is found to take place at a 100°C for steel with a C content below 0.1%; however, if the C content is increased to 0.3% the transformation temperature falls to below zero. Under plastic deformation far greater strain hardening is exhibited by the low-C steel due to the larger capacity for strain hardening of the ε-phase. The behaviour is compared with a 26% Ni steel, where the austenite breaks down to ferrite under plastic deformation and with an 18% Ni, 6% Mn steel where the austenite does not undergo a transformation during deformation. Further studies on the Mn steels show that the character of the phase transformation on plastic deformation depends on the

Card 1/2

The effect of deformation ...

relative values of the deformation temperature and the critical temperatures of $\gamma \rightarrow \alpha$ and $\gamma \rightarrow \varepsilon$ transformations. D.S.Steynberg is mentioned in the article in connection with his testing apparatus. There are 7 figures, 2 tables and 4 references: 1 Soviet-bloc and 3 non-Soviet-bloc. The three references to English language publications read as follows:
Ref.1: Walters F.M., Welles C. Trans. ASM, v.24, no.2, 1936, 359;
Ref.3: Troiano A.R., McGuire F.T. Trans. ASM, v.31, 1943, 340;
Ref.4: Cina B. Acta met, v.6, no.12, 1958.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M.Kirova (Ural Polytechnical Institute im. S. Kirov)

SUBMITTED: February 27, 1961

BOGACHEV, I.N.; MEL'NIKOVA, V.I.

Kinetics of ordering in Ni_3Mn alloys. Fiz. met. i metalloved. 12 no.5:678-684 N '61. (MIRA 14:12)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova.
(Nickel-manganese alloys—Metallography)
(Metal crystals)

BOGACHEV, Ivan Nikolayevich; SYRCHINA, M.M., red. izd-va; MAL'KOVA, N.T., tekhn. red.

[Metallography of cast iron] Metallografiia chuguna. 2. izd. dop. i ispr. Sverdlovsk, Metallurgizdat, 1962. 392 p. (MIRA 15:12)

(Cast iron—Metallography)

32546
S/128/62/000/001/002/002
A004/A127

18.8360

AUTHORS: Bogachev, I.N.; Mints, R.I.

TITLE: Cavitation resistance of cast austenitic steels

PERIODICAL: Liteynoye proizvodstvo, no. 1, 1962, 30 - 32

TEXT: The authors report on tests carried out to study the cavitation resistance of various steel grades. The tests were carried out on an impact-erosion stand. The specimen rotation speed was 78 m/sec, the constant water pressure being 0.28 atm. The nozzle outlet bore was 8 mm in diameter, while distance d = 1.4 cm. The authors point out that corrosion resistance is only one pre-requisite of parts operating under cavitation effect. To ensure a high cavitation resistance, the steel should possess a high resistance to micro-impact action, its structure should represent a homogeneous solid solution. Ferrite possesses the lowest cavitation resistance, while martensite is most cavitation-resistant. Based on the tests, the 30Kh10G10 (30Kh10G10) non-nickel austenitic steel has been developed. Steels of this type were investigated having the following composition: 0.28 - 0.44% C; 7 - 10.6% Mn; 9.6 - 12% Cr; 0.34 -0.57% Si; 0.011 - 0.041% S; and 0.01 - 0.032% P. The authors show the effect

Card 1/2

Cavitation resistance of cast austenitic steels

of the austenitic nature of the steel on the cavitation resistance by an example and point out that the 30Kh10G10 grade steel ensures a more intensive hardening of the surface layer than the 1Kh18H8 (1Kh18N8) grade steel. It is stated that, generally, the less stable chrome-manganese austenite has a higher cavitation resistance, since it is subjected to self-hardening during the cavitation process owing to the austenite decomposition and the formation of martensite and the ε-phase. The test results show that, in choosing cavitation-resistant steels, preference should be given to stainless, austenitic alloys with an unstable structure, which are hardened not only by the plastic deformation of the initial structure, but by phase transformation. Tables show the mechanical properties of such steels after austempering heat treatment, depending on the deformation temperature and the effect of the deformation rate on the mechanical properties of steel with 0.28% C, 8.8% Mn and 10.9% Cr. The higher the heating temperature and the time of isothermic holding, the greater is the formation of the α-phase and carbides. A table shows the cavitation resistance of 30Kh10G10 grade steel in comparison with other grades mainly used in the construction of hydraulic machines. There are 4 figures, 7 tables and 8 references.

Card 2/2

S/114/62/000/004/005/008
E114/E554

18.1150

AUTHORS: Bogachev, I.N., Doctor of Technical Sciences, Professor and Mints, R.I., Candidate of Technical Sciences

TITLE: Principles underlying the choice of steel for hydraulic turbines

PERIODICAL: Energomashinostroyeniye, no.4, 1962, 27-30

TEXT: Certain steels with good anti-corrosive properties, such as 18-8 chrome-nickel stainless steel are, nevertheless, easily damaged by cavitation. The article relates the results of microscopic investigations of the relationship between the structure of metal and its resistance to cavitation, which lead to the conclusion that in addition to having good anti-corrosive properties, the suitable steel should withstand well the micro-impulsive forces. Therefore such steel will be a homogeneous solid solution. The least resistance to cavitation is offered by ferritic steels and the great by martensite. The most suitable steels are austenitic, which, in the process of deformation, have the property of self-hardening by the conversion of

Card 1/3

some of the austenitic structures into martensite. For example, the unstable austenitic steel containing at least 0.3-0.4% carbon forms martensite along the lines of deformation when subjected to micro-impulsive forces and is, therefore, well resistant to cavitation. It is necessary to choose the ratio between the carbon content and the content of the alloying elements in the austenitic steel such that martensite should not begin to form too early. Based on the foregoing, a new austenitic steel designated 30Х10Г10 (30Kh10G10) was developed containing about 0.3% carbon, and equal quantities of chrome and manganese. This steel is less stable than 18-8 chrome-nickel steel and it therefore has greater self-hardening properties. Instead of wearing by pitting and by growth of individual pits, the new steel wears uniformly over the whole surface. To withstand cavitation, the steel should not only deform plastically under cavitation, but also the super-saturated solid solution of austenite should decompose with the formation of martensite. The exact chemical analysis of the 30Kh10G10 steel is 0.28-0.32% C, 9-10% Cr, 9-10% Mn, 0.3-0.5% Si, 0.02-0.03% P, 0.03-0.04% S.
Card 2/3

Principles underlying the ... S/114/62/000/004/005/008
E114/E554

After quenching in water or air from 1100°C, the steel assumed austenitic structure. Mechanical properties are given and resistance to cavitation is shown in tabular form to compare well with other steels. The new steel can be used in the form of castings, sheet and welding material. There are 5 figures and 3 tables.

Card 3/3

BOGACHEV, I.N., doktor tekhn.nauk, prof.; MINTS, R.I., kand.tekhn.nauk; PETUKHOVA, T.M., inzh.

Effect of phase constitution on the cavitation resistance of bronze. Metalloved.i term.obr.met. no.4:28-31 Ap '62. (MIRA 15:4)

1. Ural'skiy politekhnicheskiy institut.
(Bronze—Metallography) (Phase rule and equilibrium)
(Cavitation)

35918
S/126/62/013/001/009/018
E111/E580

18.7500

AUTHORS: Yershova, L.S. and Bogachev, I.N.

TITLE: Influence of preliminary plastic deformation on the $\gamma \rightarrow \varepsilon$ transformation in manganese steel

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.1, 1962, 107-113

TEXT: It is known that preliminary plastic deformation greatly affects the martensite transformation, but there are no published data on the influence of preliminary plastic deformation on the transformation of austenite into the ε-phase. In the present work, type P10 (G20) steel (0.06% C and 19.7% Mn) was used. In this alloy, transformation of austenite into ε-phase on cooling starts at 90-100°C and continues down to room temperature. Deformation (up to 33.2% at 300 and up to 27.3% at 450°C) was carried out by extension of tensile test specimens machined from water-quenched samples, followed by metallographic and dilatometric testing, hardness measurement and X-ray phase analysis. All specimens were air cooled after deformation. From their deformed zones, 5-10 mm thick specimens were prepared and

Card 1/3

annealed in a lead bath at 400, 650 and 850°C. The work showed that preliminary plastic deformation has a regular and substantial effect on the transformation of austenite into the ε-phase. Up to 3% deformation at 300°C has a strong activating effect on the transformation, but heavier deformation produces a stabilizing influence which becomes more pronounced with increasing deformation. The activating effect is attributed to stresses produced at small deformations, the stabilizing effect to the refinement of grains and mosaic blocks and the formation of shear planes. Preliminary deformation at 450°C has only the stabilizing effect, as a result of improvement in the plastic properties of the alloy. Annealing of an alloy previously deformed at 300-400°C increases stabilization because stresses are removed and further block boundaries produced. The ε-phase, formed by cooling both previously deformed and undeformed austenite leads eventually to further strengthening of the alloy. The dispersion of the ε-phase formed on cooling deformed austenite is greater than that of ε-phase formed from undeformed austenite. The phase transformation of austenite into ε-phase has features characteristic of the

Influence of preliminary ... S/126/62/013/001/009/018
E111/E580

martensite mechanism. There are 5 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im.S.M.Kirova
(Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: May 12, 1961

Card 3/3

S/126/62/013/002/009/019
E021/E480

18.1150

AUTHORS: Bogachev, I.N., Mel'nikova, V.I.

TITLE: The influence of plastic deformation on the process of ordering in nickel-manganese alloy

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.2, 1962, 248-257

TEXT: The two alloys investigated contained: Alloy 1: 23.54% Mn, 0.63% Fe, 0.07% C, 0.21% Si, 0.005% P and 0.027% S; Alloy 2: 23.30% Mn, 0.68% Fe, 0.02% C, 0.24% Si, 0.007% P and 0.017% S. Wire samples prepared from Alloy 1 were quenched in water from 1000°C. Various stages of ordering were obtained by holding for different times at 450°C and quenching in water. The samples were then deformed by drawing at room temperature. The change in electrical resistance in the process of plastic deformation was followed. Electrical resistance and mechanical properties were measured on cold-drawn Alloy 2 wire with 89% deformation. Magnetic measurements were carried out on cylindrical specimens (3 mm diameter, 50 mm length) with 88% reduction. After heating at 350, 400, 425, 450, 475 and

Card 1/3

500°C, the samples were water-quenched and measurements were carried out at room temperature. Results showed that plastic deformation of samples in the quenched state or in the initial stages of ordering decreased the electrical resistance but increased it in the later stages of ordering. The difference in effects is attributed to the different structural states. Electrical resistance, magnetic properties and tensile strength of deformed nickel-manganese alloys changes in two stages during ordering. In the first stage the change is probably caused by the occurrence of a large number of ordered regions of small dimensions. The second stage is connected with the increase in size of the ordered domains and an increase in quantity of ordered material. The maximum rate of the ordering process is observed in the range 450 to 475°C. Near the temperature of phase transformation the rate of ordering is slow as a result of the small difference between the free energy of ordered and disordered phases. The decrease in ordering rate at temperatures below 450°C is probably connected with a decrease in the mobility of atoms. There are 5 figures and 1 table.

S/126/62/013/002/009/019
The influence of plastic deformation .. E021/E480

ASSOCIATION: Ural'skiy politekhnicheskiy institut
im. S.M.Kirova (Ural Polytechnical Institute
imeni S.M.Kirov)

SUBMITTED: March 6, 1961

Card 3/3

KOLEVATOV, V.N.; BOGACHEV, I.N.

Effect of the shape and size of graphite on gray cast iron plasticity. Fiz. met. i metalloved. 13 no.2:258-262 F '62. (MIRA 15:3)

1. Institut metallurgii Ural'skogo filiala AN SSSR i Ural'skiy politekhnicheskiy institut im. S.M.Kirova.
(Cast iron--Metallography) (Plasticity)

36685

S/126/62/013/002/015/019
E111/E135

18.7500
AUTHORS: Yershova, L.S., and Bogachev, I.N.

TITLE: Study of phase work hardening during the $\gamma \rightleftarrows \varepsilon$ transformation in an iron-manganese alloy

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.2, 1962, 300-304

TEXT: The influence of phase transitions on the rate of the $\gamma \rightleftarrows \varepsilon$ transformation was studied. This study was carried out since the authors found no published work on this subject. Type Г20 (G20) alloy (0.06% C, 19.7 Mn, 0.92 Si, 0.003S and 0.009 P) was used. Dilatometric specimens and specimens for metallographic and X-ray structural analysis were prepared from the heat-treated material. Both fine and coarse-grained specimens were used. Phase transitions were effected by heating for 3-5 minutes in a salt bath and cooling in air, X-ray and metallographic examination and hardness tests being made after each cycle. Dilatometric investigation was carried out with repeated heating to 300 °C-air cooling cycles. The influence of

Card 1/3

maintained during repeated cycles, this being the manifestation of the heredity of the austenite grain. With the aid of phase work-hardening followed by recrystallization, austenite in manganese alloys containing a considerable quantity of ε-phase can be recrystallized. The martensitic character of the ε-transformation is confirmed by the formation of a relief on a polished surface, as a result of the phase transformation. There are 6 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M. Kirova
(Ural Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: June 30, 1961.

X

36598
S/126/62/013/003/010/023
E111/E435

18.1100

AUTHORS: Mints, R.I., Bogachev, I.N.

TITLE: Hardening of solid solutions based on iron during local loading

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.3, 1962, 399-405

TEXT: It is known that under the given conditions, phase and structural changes greatly affect the resistance of austenitic alloys to concentrated impact and micro impact loading. In the present investigation, hardening during local static and impact loading of austenite, ferrite, martensite and ε-phase was studied. The range of compositions covered, in addition to armco iron, was: 0.03 to 0.38% C, traces to 37.8% Mn, traces to 0.27% Cr, traces to 36.4% Ni, 0.17 to 0.58% Si, 0.01 to 0.17% P, 0.007 to 0.030% S. Local static loading was carried out on a Brinell test machine (sphere diameter 5 mm, load 750 kg). Concentrated impact was delivered by a 6 kg weight sharpened to 60° falling through a height of 0.5 m. Micro impact was obtained by means of a hydraulic micro-erosion test stand

Card 1/3

Hardening of solid solutions ...

(specimen revolved at a velocity of 78 m/sec, jet pressure 0.28 atm, nozzle diameter 5 mm). After annealing and water quenching (to obtain the required range of phases) the specimens were tested. Hardening was studied by microhardness measurements on metallographic polished sections. It was found that all the solid solutions are only slightly and similarly hardened by local static loading but, under local impact and micro impact loading, show a considerable and different tendency to hardening. The low-carbon austenitic nickel and manganese alloys showed this effect; the differences are due to the nature of the plastic deformation and of the solid solution (i.e. nickel or manganese austenite). The martensite and ε-phase formed in the course of plastic deformation can harden spontaneously which leads to general hardening of the corresponding alloys. The formation of ε-phase as a result of solid-solution decomposition during plastic deformation, brought about by local impact and micro impact loading, produces greater hardening of the alloy than when ε-phase is formed through heat treatment. The hardening of alloys by plastic deformation is due to the plastic deformation of

the solid solution, phase changes during the decomposition of the solid solution and hardening of the new phase formed as a result of this decomposition. The extent to which each factor contributes to the general ability of the alloy to harden depends on the nature of the solid solution and loading. There are 8 figures and 1 table.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M.Kirova (Ural Polytechnical Institute imeni S.M.Kirov)

SUBMITTED: March 17, 1961 (initially)
October 25, 1961 (after revision)

Card 3/3

KOLEVATOV, V.N.; BOGACHEV, I.N.

Resistance to divorcement as one of the characteristics of the structural strength of cast iron. Fiz. met. i metalloved. 13 no.4:546-549 Ap '62. (MIRA 16:5)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova i Institut metallurgii Ural'skogo filiala Akademii nauk.
(Cast iron--Metallography)

S/126/62/014/006/004/020
E111/E151

AUTHORS: Bogachev, I.N., and Malinov, L.S.

TITLE: Influence of chromium and nickel on the $\gamma \rightleftarrows \varepsilon$ transformation in an iron-manganese alloy

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.6, 1962, 828-833

TEXT: As this effect has not been adequately studied, the present research was considered to be of interest. An alloy of iron with 20% manganese was used as the standard and also as the base alloy for preparing the chromium- and nickel-alloyed materials: types Г20Х2 (G20Kh2), Г20Х6 (G20Kh6), Г20Х10 (G20Kh10), Г20Н2 (G20N2), Г20Н6 (G20N6), Г20Н10 (G20N10). X-ray, dilatometric, hardness-measurement and metallographic methods were used, the alpha-phase being determined magnetically. Addition of chromium or nickel was found to lower the temperature at which the $\gamma \rightarrow \varepsilon$ transformation commenced, but to have no effect on that of its completion. The commencing temperature of this transformation is a linear function of the alloying-element concentration. Chromium or nickel additions also cause the

Card 1/2

reverse transformation to take place at a lower temperature; the temperature of both its commencement and completion being a linear function of alloying-element concentration. The amount of ε-phase decreases in proportion to the increase in alloying-element concentration, and is somewhat greater in quenched than in annealed specimens. The effect of chromium and nickel on the temperature range of the $\gamma \rightarrow \varepsilon$ transformation and the kinetics of the ε-phase formation on continuous cooling is similar to that on the martensitic transformation in carbon steels. The effect of nickel on the $\gamma \rightleftarrows \varepsilon$ transformation is about 5 times as great as that of chromium.
There are 6 figures and 2 tables.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M. Kirova
(Ural Polytechnical Institute imeni S.M. Kirov)

SUBMITTED: May 24, 1962

BOGACHEV, I.N.; MAKHANEK, G.V.

Thermokinetics of graphite formation in gray cast iron. Lit. proizv. no.2:18-20 F '63. (MIRA 16:3)
(Cast iron--Metallography) (Crystallization)

BOGACHEV, I.N., doktor tekhn. nauk; MINTS, R.I., kand. tekhn. nauk

Increasing the cavitation resistance of machine parts by the use of surface-active agents. Izv. vys. ucheb. zav.; mashinostr. no.2:224-230 '63. (MIRA 16:8)

1. Ural'skiy politekhnicheskiy institut.

L 17735-63 EWP(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-4/Pad
JD/HW

ACCESSION NR: AP3006149 S/0148/63/000/007/0162/0168

AUTHORS: Bogachev, I. N.; Rozhkova, S. B.

TITLE: Hardening of austenite steel during cold plastic deformation.

SOURCE: IVUZ. Chernaya metallurgiya, no. 7, 1963, 162-168

TOPIC TAGS: steel, austenite steel, steel hardening, cold plastic deformation, C, Si, Mn, P, S, Cr, Ni, Ti, 40G13 steel, 40Kh10G10 steel

ABSTRACT: The effect of cold plastic deformation on the structure and properties of steel of various compositions of C, Si, Mn, P, S, Cr, Ni, and Ti has been studied. After plastic deformation (rolling), the most significant increase in hardness was observed in steels of the type 40G13 and 40Kh10G10. The sharpest increase in hardness was observed when the degree of deformation was increased up to 10%, a further increase of deformation resulted in more uniform change of hardness. Nickel and chrome-nickel austenite steels are hardened to a much lesser degree. The addition of chrome did not exhibit an

Card 1/3

ACCESSION NR: AP3006149

effect upon the hardness of the studied steels. The increase in hardness of the above steels is explained by the fact that these steels are not stable in cold plastic deformation; they undergo a martensite transformation by forming a large quantity of Alpha-phase. The quantity of Alpha-phase increases with an increase of the degree of deformation. With an increase of temperature, the thermodynamic stability of austenite increases. When the deformation temperature of 40G13 steel was increased to 100 and 200C, the quantity of Alpha-phase decreased, thus, decreasing its hardness. However, at 400 and 600C, the hardness did not change. It was concluded that the stability of austenite steels during plastic deformation depends upon the nature of austenite. The unstable manganese and chrome-manganese austenite steels, when heated after a plastic deformation, are softened much faster even at much lower temperatures than the stable chromium-nickel steel. This is also affected by an additional softening which takes place by means of martensite transformation of the austenite, which is formed during plastic deformation. The plastic deformation increases the deformation process sharply of both stable

L 17735-63

ACCESSION NR: AP3006149

and unstable austenite steels. The hardness of deformed chromium-nicket steel can be additionally increased by means of a short-time aging. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural politechnic institute)

SUBMITTED:	21Feb61	DATE ACQ:	18Sep63	ENCL:	00
SUB CODE:	ML	NO REF SOV:	004	OTHER:	000

Card 3/3

BOGACHEV, I.N.; DAVYDOV, G.S.

Effect of the volume of martensite transformation on the graphitization of white cast iron. Izv. vys. ucheb. zav.; chern. met. 6 no.2:104-110 '63. (MIRA 16:3)

1. Ural'skiy politekhnicheskiy institut.
(Cast iron—Metallography)
(Metals, Effect of temperature on)

BOGACHEV, I.N.; ROZHKOVA, S.B.

Role of defects in the acceleration of the graphitizing process after hardening. Izv. vys. ucheb. zav.; chern. met. 6 no.6: 143-147 '63. (MIRA 16:8)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Hardening) (Crystal lattices--Defects)

BOGACHEV, I.N.; ROZHKOVA, S.B.

Hardening austenitic steels by cold plastic deformation. Izv. vys. ucheb. zav.; chern. met. 6 no.7:162-168 '63. (MIRA 16:9)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Hardening) (Deformations (Mechanics))

BOGACHEV, I.N.; MINTS, R.I.; Prinimala uchastiye PETROVA, S.N.

Effect of treatment in fused media on the plasticity of transformer steel. Izv. vys. ucheb. zav.; chern. met. 6 no.9:174-176 '63. (MIRA 16:11)

1. Ural'skiy politekhnicheskiy institut.

S/185/63/008/002/007/012
D234/D308

AUTHORS: Mel'nikova, V. I. and Bogachev, I. N.

TITLE: Kinetics of the ordering in the Ni_3Mn alloy

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 8, no. 2, 1963, 219-226

TEXT: The authors investigated the dependences of electrical resistance, saturation magnetization, coercive force, volume and thermal emf on the duration of isothermal treatment at 350, 400, 425, 450, 475 and 500°C. The velocity of transition into ordered state was found to be maximal at 450 and 475°C. Conclusions: there are two stages of variation of resistance, magnetization and coercive force, which the authors attribute to properties of structural transformation during ordering. Plastic deformation does not always affect the variation of electrical resistance in the same manner at different stages of ordering, which is probably due to different structural states of the alloy at these stages. Plastic deformation

Card 1/2

Kinetics of the ordering ...

affects substantially the variation of physical properties in subsequent isothermal treatment below the phase transition temperature T_c, but general regularities of the kinetics of ordering are as in the hardened alloy. There are 6 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute), Sverdlovsk

BOGACHEV, I.N., doktor tekhn.nauk, prof.; MINTS, R.I., kand.tekhn.nauk; VEKSLER, Yu.G.

Cavitational resistance of austenitic ferrite steel.
Energomashinostroenie 9 no.9:29-31 S '63. (MIRA 16:10)

L 10399-63 EWP(q)/EWT(m)/BDS--AFFTC/ASD--JD

ACCESSION NR: AP3001694 S/0126/63/015/005/0678/0684

AUTHOR: Bogachev, I. N.; Malinov, L. S.

TITLE: Effect of chromium and nickel on phase transformations and strengthening of manganese steel during plastic deformation

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 5, 1963, 678-684

TOPIC TAGS: high-manganese G20 steel, cold deformation, phase transformations, strain hardening, effect of Cr, effect of Ni, prestraining, Epsilon phase, Alpha phase

ABSTRACT: Specimens of G20 high-manganese steel (compositions shown in Table 1 of Enclosure) annealed at 1050C were used to study the effect of Cr and Ni on phase transformation and strain hardening. It was found that both Cr and Ni stabilized austenite and delayed Epsilon-phase formation. Plastic deformation increased the amount of the Epsilon-phase in unalloyed G20 from 60 to 88%, in alloy G20Kh2 from 45 to 76%, and in alloy G20Kh6 from 32 to 52%. Ni was found to be a much stronger austenite stabilizer: the initial amount of Epsilon-phase in alloy G20N2 was only 16%; plastic deformation increased it to 32%. In all alloys,

Card 1/2

L 10399-63
ACCESSION NR: AP3001694

the highest rate of Epsilon-phase formation was observed during stretching of up to 4%. In alloy G20Kh12, which in the annealing condition was fully austenitic, an intensive formation of the Epsilon-phase occurred during stretching of up to 12%. In alloys G20N6 and G20N10 cold working produced a negligible amount of Epsilon-phase, not exceeding 2--3% at maximum deformation. The Alpha-phase formation rate was insignificant, not exceeding 5% for all alloys. No Alpha-phase formation was observed in alloys G20N6 and G20N10. Stretching reduced the dilatometric effects of the Epsilon-to-Gamma and Gamma-to-Epsilon transformations, shifted the temperature range of the Epsilon-to-Gamma transformation toward lower temperatures, and lowered the temperature of the beginning of the Gamma-to-Epsilon transformation. Both Cr and Ni lowered phase transformation temperatures. Cr and especially Ni decreased the strain-hardening exponent at strains of 0.2--2.0%. At strains of 2--13%, Ni alone slightly decreased the exponent. The effect of Cr and Ni on the mechanical properties of the alloys is presented in Table 2 of Enclosure. The yield strength of the alloys, which is generally low, can be increased by prestraining by 4--14%, depending on the alloy composition. Orig. art. has: 5 figures and 3 tables.

Ural Polytechnical Inst.

Card 2/2

L 18103-63 EWP(q)/EWI(m)/EDS AFFTC/ASD Pad JD/HW
ACCESSION NR: AP3002844 S/0126/63/015/006/0860/0866

AUTHORS: Chumakova, L. D.; Bogachev, I. N.; Shklyar, R. Sh; Mints, R. I.

TITLE: Phasal and structural changes in the surface layer of austenite alloys at the initial stage of the cavitation effect

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 6, 1963, 860-866

TOPIC TAGS: cavitation effect, austenite alloy , Ni, Mn, phasal change., structural change

ABSTRACT: Structural changes in the surface layer of austenitic Ni and Mn alloys subjected to minute impacts were studied by x-rays. It was established that the cavitation effect results in the increase of submicroscopic nonhomogeneity of intragranular structure and in a partial decomposition of austenite. Depending on their chemical composition, the manganese samples showed a partial decomposition of austenite and the formation of ε-phase or of ε-phase and martensite. The Ni samples showed decomposition of a small amount of austenite and the formation of martensite. The conversions $\gamma \rightleftarrows \varepsilon$ in the G30 alloy and $\gamma \rightleftarrows \varepsilon \rightarrow \alpha$

Card 1/2

L 18103-63
ACCESSION NR: AP3002844

in the 40G14 steel harden the alloys and increase their resistance to cavitational destruction. The high resistance of the stable manganese austenite 40G30 to the impacts proves that phasal transformations are not the only factors determining the high stability of alloys with respect to the cavitation effect. Orig. art. has: 1 table, 3 graphs, and 2 photographs.

ASSOCIATION: Ural'skiy politeknicheskiy institut im. S. M. Kirova (Ural Polytechnic Institute)

SUBMITTED: 31Oct62 DATE ACQ: 23Jul63 ENCL: 00

SUB CODE: ML NO REF SOV: 005 OTHER: 001

Card 2/2

BOGACHEV, I.N.; ROZHKOVA, S.B.

Peculiarities of the effect of martensite transformation on the graphitization of nickel steel. Fiz. met. i metalloved. 16 no.2:267-272 Ag '63. (MIRA 16:8)

1. Ural'skiy politekhnicheskiy institut im. S.M. Kirova.
(Nickel steel—Metallography)
(Phase rule and equilibrium)

BOGACHEV, I.N.; YEGOLAYEV, V.F.; MALINOV, L.S.

Stabilization of $\gamma \rightarrow \varepsilon$ transformations during recurrent phase transitions. Fiz. met. i metalloved. 16 no.4:544-550 O '63. (MIRA 16:12)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.

BOGACHEV, I.N.; LITVINOV, V.S.; MINTS, R.I.

Characteristics of the plastic deformation of austenitic manganese and nickel alloys. Fiz. met. i metalloved. 16 no.4:596-602 O '63. (MIRA 16:12)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.

BOGACHEV, I.N.; YEGOLAYEV, V.F.

Effect of molybdenum and tungsten on $\gamma \rightleftarrows \varepsilon$ transformations in Fe-Mn alloys. Fiz. met. i metalloved. 16 no.5:710-713 N '63. (MIRA 17:2)

1. Ural'skiy politekhnicheskiy institut im. S.M.Kirova.

BOGACHEV, I.N.; DAVYDOV, G.S.; ROZHKOVA, S.B.; SIDORENKO, R.A., kand. tekhn. nauk, retsenzent;

[Grafitization and heat treatment of white cast iron] Grafitizatsiia i termicheskaia obrabotka belogo chuguna. Moskva, Izd-vo "Mashinostroenie," 1964. 145 p.
(MIRA 17:8)

L 17592-65 ENT(m)/EWA(d)/T/EWP(t)/EWP(b) LJP(c)/AEDC(a)/ASD(m)-3/ASD(f)-2/ASD(p)-3 JD/WB/MLK

ACCESSION NR AM4046710 BOOK EXPLOITATION S/

Bogachev, I. N.; Mints, R. I.

Improving the cavitation-erosion resistance in machine parts (Povy*sheniye kavitatsionno-erozionnoy stoykosti detaley mashin), Moscow, Izd-vo "Mashinostroyeniye", 1964, 142 p. illus., biblio. 3,800 copies printed.

TOPIC TAGS: metallography, cavitation, austenitic steel, copper alloy, surface activity, chromansil steel

PURPOSE AND COVERAGE: This book is devoted to the metallography of cavitation failure of ferrous and nonferrous alloys. It considers problems related to selection of alloy compositions that are resistant to cavitation-erosion failure. On the basis of established laws, the ways of improving the cavitation-erosion resistance of metals are shown. The book is intended for technical and scientific workers -- metallurgists, heat treaters, and designers.

TABLE OF CONTENTS [abridged]:

Introduction -- 3

Card 1/2

L 17592-65
ACCESSION NR AM4046710

SUB CODE: MM SUBMITTED: 25Feb64 NR REF SOV: 043

OTHER: 015

Card 2/2

L 20996-65 EWP(k)/EWT(m)/EWP(b)/T/EWA(d)/EWP(t)/ Pf-4 ASD(f)-3/ASD(m)-3/IJP(c)
JD/HW

ACCESSION NR: AP5000142 S/0149/64/000/005/0119/0122

AUTHOR: Odinokova, L.P., Bogachev, I.N.

TITLE: Metallographic investigation of the plastic deformation of zinc under different types of loading

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 5, 1964, 119-122

TOPIC TAGS: metallography, zinc, plastic deformation, zinc crystal structure, recrystallization annealing, twinning

ABSTRACT: The plastic deformation of zinc, a metal with a hexagonal lattice, was investigated during exposure to different loading conditions. The starting material was granulated zinc, rolled to a strip and subjected to recrystallization annealing. Average grain size was 0.25 mm. Specimens cut from the strip were subjected to tensile, compressive, and impact testing. Deformation by tension and compression was accomplished at rates of 0.05, 0.8, 12.5, and 25.0 mm/min. Impact testing was done with a 6 kg weight from a height of one meter. Plastic deformation of zinc at rates of 0.05 mm/min. and lower was accompanied by the appearance of right-angled parallel lines in the grains, which were traces of the intersection of the slip plane with the specimen surface. Slip occurs along the base plane. As deformation increased, twinning occurred.

Card 1/2

L 20996-65
ACCESSION NR: AP5000142

Twinning was enhanced by an increase in the deformation rate from 0.05 to 0.8 mm/min. Specimens deformed by compression did not reveal any fundamental differences in the pattern of plastic deformation, but the mechanism of deformation with impact loading was different. Intense twinning occurred both at room temperature and at the temperature of liquid nitrogen. The specimens deformed at room temperature had twins in the form of segments or needles, whereas impact deformation at the temperature of liquid nitrogen produced twins in the form of rectilinear colonies with branched ends. Twinning was the main mechanism of deformation of zinc under both static and impact loading. It was found that the base plane was not the only plane along which slip occurs in zinc at room temperature. A second slip plane, evidently pyramidal, was observed under certain conditions of loading zinc. Orig. art. has: 6 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural'sk Polytechnical Institute)

SUBMITTED: 12Dec63 ENCL: 00 SUB CODE: MM, SS

NO REF SOV: 005 OTHER: 004

Card 2/2

ACCESSION NR: AP4013093 S/0126/64/017/001/0049/0055

AUTHORS: Bogachev, I. N.; Yegolayev, V. F.; Malinov, L. S.

TITLE: Transformation of austenite into ε-phase at low temperatures

SOURCE: Fizika metallov i metalloved., v. 17, no. 1, 1964, 49-55

TOPIC TAGS: austenite, austenitic transformation, epsilon phase, G19 iron, steel, iron, gamma epsilon transformation, supercooled austenite

ABSTRACT: Experiments were performed to determine the possibility of a complete supercooling of austenite, to study the isothermal formation of ε-phase at low temperatures, and to clarify the effect of heating and cooling rates on the γ-ε transformation. The test specimens were made of G19 iron containing (in %) 19.1 Mn, 0.05 C, 0.20 Si, 0.034 P, and 0.014 S. This metal was melted in a 50-kg induction furnace and was cast into ingots which were homogenized for 10 hours at 1150C and rolled into rods 6 mm in diameter (tempered at 1150C). A dilatometer provided with a photographic recording device and a thermostat was used in the tests. The temperatures of -40, -50, -90, -140, -160, and -180C, at which the

Card 1/3

ACCESSION NR: AP4013093

samples were held isothermally, were attained with dry ice, liquid nitrogen, and a mixture of acetone with nitrogen. To stabilize their austenite, the samples were heated to 950C and then subjected to 25 heating-chilling cycles between 400C and -196C. Experiments proved that $\gamma - \varepsilon$ transformation may progress in isothermal conditions, provided that the nonisothermally formed ε-phase is absent. In given temperature intervals the transformation started after incubation periods the length of which depended on the cooling temperature. Figure 1 of the Enclosure shows the rates of transformations at various temperatures. Studies of the temperature-transformation rate relationship proved that the rate reached its maximum at -90C. At a relatively low starting temperature for the $\gamma - \varepsilon$ transformation and at a rapid rate of chilling it was found possible to supercool the austenite either partly or fully. Under these conditions the ε-phase could be produced in the course of heating a sample. The rate of cooling and heating proved to exert a substantial influence on the progress of the transformation, with the low rates leading to a more complete effect (for the influence of the rates of heating and cooling on the dilatometric effect of the $\gamma - \varepsilon$ transformation see Fig. 2 of the Enclosures). The ε-phase produced before the start of an isothermal period served as an activator in the isothermal transfor-

Card 2/3

ACCESSION NR: AP4013093

mation, as did the lowering of the heating rate down to a certain point. Further diminishing of the rate, however, slowed the process. The $\gamma - \varepsilon$ transformation exhibited all the features of usual phase transformations and should not be regarded as an athermal process. Orig. art. has: 6 graphs and 4 equations.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S. M. Kirova (Ural Polytechnical Institute)

SUBMITTED: 06Apr63 DATE ACQ: 26Feb64 ENCL: 02'

SUB CODE: MM NO REF SOV: 006 OTHER: 004

Card 3/3

L 32440-65 EWT(m)/EWA(d)/T/EWP(t)/EWP(b) IJP(c) MJW/JD/JG
ACCESSION NR: AP4044154 S/0126/64/018/002/0257/0262

25
24
B

AUTHORS: Potekhin, B.A.; Bogachev, I.N.

TITLE: Stress relaxation in chromium-manganese austenitic "30Kh10G10" steel

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 2, 1964, 257-262

TOPIC TAGS: stress relief, cavitational resistance, chromium, manganese, austenitic steel

ABSTRACT: The steel specimens used in the investigation were 0.2 x 4 x 130 mm in size and contained 0.27% C; 9.6: Mn, 9.1% Cr, 0.35% Si; 0.03% S and 0.05% P. In order to bring about a variety in the phase composition, a heat treatment was applied under conditions which excluded oxidation and decarburization. A comparison with specimens having a stable austenitic structure showed that the stress relaxation occurs more intensively in specimens with an unstable austenitic structure. Phase transformation enhanced the effectiveness of the stress relief heat treatment and/stress was relieved during cooling to the temperature of liquid nitrogen.

Card 1/2

L 32440-65

ACCESSION NR: AP4044154

Primary stresses are relieved by 90% after heat treatment at 550 C and a two-hour holding period. It may be assumed that secondary stresses are also relieved to a considerable extent. Above 550 C cavitational strength decreased somewhat as a result of the formation of chromium carbides. At the same time, the structure became more stable. The high cavitational resistance is attributed, in part, to the relaxation of stresses during the formation of new phases under the effect of microimpact. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S.M. Kirova (Urals Polytechnic Institute)

SUBMITTED: 12Aug63 ENCL: 00

SUB CODE: MM NR REF SOV: 008 OTHER: 000

Card 2/2

L 16309-65 EWT(m)/EWP(w)/EWA(d)/EWP(t)/T/EWP(b) Pu-4 IJP(c) MJW/JD/JG/JXT(cz)
ACCESSION NR: AP4046093 S/0126/64/018/003/0423/0427

AUTHOR: Yegolayev, V. F.; Bogachev, I. N.

TITLE: Phase transformation and strengthening of iron-manganese-molybdenum and iron-manganese tungsten alloys during plastic deformation

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 3, 1964, 423-427

TOPIC TAGS: high manganese steel, C_i19^* steel, molybdenum containing steel, tungsten containing steel

ABSTRACT: The effect of molybdenum and tungsten on the phase transformation and strength of C_i19^* (19% Mn) steel has been studied. It was found that this steel, containing up to 4.2% Mo or up to 4.1% W and quenched from 1150C, has an austenitic structure with a small quantity of E-phase; at a Mo content of 6.3%, the structure becomes fully austenitic. Both molybdenum and tungsten were found to impede the formation of E-phase and to promote the formation of α-phase under the effect of plastic deformation. The E-phase forms mainly at lower reductions of up to 4 to 6%, while an intensic formation of α-phase begins at reductions of 15—20%. The plastic deformation raises the temperature range of the E to γ transformation, lowers the temperature of the beginning fo the γ to E transformation, and reduces

Card 1/3

*C_i19 designation should be G19 designation.

L 16309-65
ACCESSION NR: AP4046093

the dilatometric effects of direct and reverse transformations. Both Mo and W lower the modulus of strain hardening of the G19 steel at low reductions but have little effect at high reductions. Both elements lower the yield strength and hardness of the G19 steel but increase the ductility, and especially the notch toughness, at subzero temperatures (see Fig. 1 of the Enclosure). Orig. art. has: 5 figures and 3 tables.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S. M. Kirova (Ural Polytechnic Institute)

SUBMITTED: 12Aug63 ENCL: 01 SUB CODE: MM

NO REF SOV: 008 OTHER: 001

Card 2/3

L 16309-65
ACCESSION NR: AP4046093

ENCLOSURE: 01

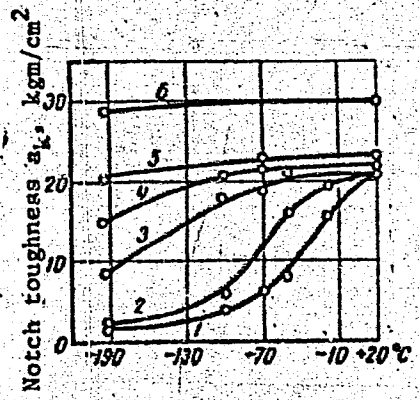

Fig. 1. Notch toughness a_k versus temperature for unalloyed G19 steel (1) and that alloyed with 1% W (2), 1% Mo (3), 2.5% Mo (4), 4% Mo (5) and 6% Mo (6)

Card 3/3

L 22900-65 EPF(n)-2/EPA(s)-2/EWT(m)/EPA(bb)-2/EWP(b)/EWA(d)/EWP(l)/EWP(t)
Pt-10/Pu-4/Pad IJP(c) WW/MJW/JD/HW/JG/WB
ACCESSION NR: AP5001245 S/0126/64/018/005/0752/0757

AUTHOR: Bogachev, I.N.; Litvinov, V.S.; Mints, R.I.; Nesterova, N.V.

TITLE: Some regularities in the destruction of metal surfaces subjected to the action of cavitation in molten lead

SOURCE: Fizika metallov i metallovedeniye, v. 18, no. 5, 1964, 752-757

TOPIC TAGS: cavitation, ultrasound, molten lead, nickel corrosion, copper corrosion, austenitic steel corrosion, cavitational erosion/steel 1Kh18N9T, steel 1Kh13

ABSTRACT: The erosion of surfaces of nickel, copper, austenitic alloys of iron with nickel and manganese, and steels 1Kh18N9T and 1Kh13, acted upon by cavitation in molten lead, was investigated by means of photomicrographs and by measuring the microhardness and hardening of the surfaces. A dynamic contact between the metals and alloys and the lead was achieved by using ultrasound. It was shown that the same laws govern cavitational erosion in liquid lead and in water. Surface attack, which is primarily mechanical in character, is localized in isolated microvolumes of the surface. A relationship was observed between the hardening of the metal during the cavitational

Card 1/2

L 22900-65
ACCESSION NR: AP5001245

influence in the melt and its strength. It is concluded that pronounced anticorrosive properties of a material cannot be used as a criterion of its resistance to cavitation in water or in melts. Orig. art. has: 5 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S. M. Kirova (Ural'sk polytechnical institute)

SUBMITTED: 27May64 ENCL: 00 SUB CODE: MM

NO REF SOV: 007 OTHER: 002

Card 2/2

BOGACHEV, I.N.; FOMINYKH, K.P.

Removal of graphite from the carbide deposit of iron carbides.
Zav. lab. 30 no.8:934-935 '64. (MIRA 18:3)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

L 29967-65 EWT(m)/EPF(n)-2/EWA(d)/EWP(t)/EWP(k)/EWP(b) Pf-4/Pu-4 IJP(c) MJW/JD/HW/JG

ACCESSION NR: AP5005525 S/0136/65/000/002/0071/0077

AUTHOR: Odinokova, L. P.; Bogachev, I. N. 39 B

TITLE: The nature of plastic deformation of titanium alloys under various strain rates

SOURCE: Tsvetnyye metally, no. 2, 1965, 71-77

TOPIC TAGS: titanium, titanium alloy, aluminum containing alloy, molybdenum containing alloy, chromium containing alloy, plastic deformation, alloy ductility, alloy strength, slip, twinning, alloy deformation, deformation mechanism/VT1 titanium

ABSTRACT: VT-1 commercial-grade titanium (99.5% Ti), an α-titanium alloy with 3.86% Al (both annealed at 650C) and a β-titanium alloy with 3.11% Al, 7.12% Mo, and 10.37% Cr (quenched from 850C), were tested for their plastic behavior at deformation rates from 0.8 mm/min to impact. In static tests, increasing the strain rate from 0.08 to 25 mm/min decreased the elongation of VT-1, α- and β-alloys from 18 to 15.8, 16.1 to 10.0, and 12.0 to 5.7%, and increased the tensile strength from 59 to 64.3, 74 to 77, and 98 to 109.8 kg/mm^2, respectively. In dynamic and impact tests, deformation of all alloys becomes more localized and the length of the de-

Card 1/2

L 29967-65

ACCESSION NR: AP5005525

formed zone is reduced by one half. The deformation of VT-1 titanium occurs predominantly by slip at deformation rates lower than 0.8 mm/min, and by twinning, at higher rates. The α-alloy deforms through slip at all strain rates in static and dynamic tests; twinning occurs only in impact deformation. The β-alloy, which has a b.c.c. structure and is characterized by high tensile and yield strengths, a low uniform elongation and a large reduction of area, deforms by slip at all deformation rates tested. The deformation distribution in VT-1 titanium is much more uniform than in the β-alloy. Only 5% of the total deformation of VT-1 is comprised of visible slip, twinning, and shift along the grain boundaries. The remaining 95% is uniformly distributed throughout the volume. In the β-alloy, visible slip comprises 20% of the total deformation. Orig. art. has: 6 figures. [MS]

ASSOCIATION: none

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

NO REF SOV: 002 OTHER: 001 ATD PRESS: 3195

Card 2/2

ODINOKOVA, L.P.; BOGACHEV, I.N.

Metallographic studies of the plastic deformation of zinc under the effect of various types of loading. Izv. vys. ucheb. zav., tsvet. met. 7 no.5:119-122 '64 (MIRA 18:1)

1. Ural'skiy politekhnicheskiy institut.

BOGACHEV, I.N.; MINTS, R.I.; MALINOV, L.S.; Prinimal uchastiye MATVEYEV, A.I.

Investigating the cavitation resistance of certain iron-manganese alloys. Fiz. met. i metalloved. 18 no.4:558-563 O '64. (MIRA 18:4)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

BOGACHEV, I.N.; LITVINOV, V.S.; MINTS, R.I.; NESTEROVA, N.V.

Certain regularities of the failure of metal surfaces under the effect of cavitation in molten lead. Fiz.met. i metalloved. 18 no.5:752-757 N '64. (MIRA 18:4)

1. Ural'skiy politekhnicheskiy institut im. S.M.Kirova.

BOGACHEV, I.N.; ROZHKOVA, S.B.

Effect of preliminary hardening on the graphitization of iron alloys. Lit. proizv. no.1:17-20 Ja '65.
(MIRA 18:3)

BOGACHEV, I.N.; POTEKHIN, B.A.; KONDRATOV, V.M.; MALINOV, L.S.

Effect of heat treatment on the mechanical properties of Kh10G10 austenitic steel. Izv. vys. ucheb. zav.; chern. met. 8 no.7:161-165 '65. (MIRA 18:7)

1. Ural'skiy politekhnicheskiy institut.

BOGACHEV, I.N.; ODINCKOVA, L.P.

Plastic deformation of titanium and its alloys at low temperatures.
Fiz. met. i metalloved. 19 no.6:908-914 Je '65. (MIRA 18:7)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

ODINOKOVA, L.P.; BOGACHEV, I.N.

Character of the plastic deformation of titanium alloys under various forms of stress. TSvet. met. 38 no.2:71-77 F '65.
(MIRA 18:3)

BOGACHEV, I.N.; YEGOLAYEV, V.F.; MALINOV, L.S.

Isothermal formation of the $\mathcal{E}$-phase following precipitation hardening of iron-manganese alloys. Metalloved. i term. obr. met. no.4:2-8 Ap '65. (MIRA 18:6)

1. Ural'skiy politekhnicheskiy institut.

L 62813-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(z)/EWP(b)/EWA(c) IJP(c)
RJW/JD/JG/EM
ACCESSION NR: AP5018056 UR/0129/65/000/007/0036/0038
669.15-194:669.28'74

AUTHOR: Bogachev, I.N.

TITLE: Unstable chromium-manganese austenite steels

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 7, 1965, 36-38

TOPIC TAGS: unstable austenite, unstable steel, austenite martensite transition, steel phase transition, stress relaxation, austenite fatigue, chromium steel, manganese steel, steel hardness

ABSTRACT: The conversion of unstable austenite steels into hard martensite during plastic deformation may be used to prolong the life of various machines. The present article discusses the properties of chromium-manganese steels which were only seldom used in the past and presents curves showing: 1) changes in the amount of martensite and the hardness as functions of the degree of plastic deformation for steels 45Kh10G7 and 70Kh7N8; 2) the stress relaxation during phase transitions in 20% Mn iron alloys; and 3) the fatigue curve for the 30Kh10G10 and Kh18N9T steels (data obtained by V. L. Aleksandrov). The results show that the unstable chromium-manganese steels exhibit marked hardening effects, are fatigue resistant, and successfully resist

Card 1/2

L 62813-65
ACCESSION NR: AP5018056

micro-impact exposures. Typical for the group is the 30Kh10G10 steel. Carbon-free steels OKh12AG10, OKh14AG10, OKh15AR10, and OKh17AG10 and the steels with moderate carbon content (20-40%) are quite satisfactory, but their wear resistance is below that of 30Kh10G10. "The peculiarities of unstable austenite discussed in this paper can be easily extended to other types of unstable solid solutions." Orig. art. has: 3 figures.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural'sk Polytechnic Institute)

SUBMITTED: 00 ENCL: 00 SUB CODE: MM

NO REF SOV: 004 OTHER: 000

* STEP Translaters Consistently are in error regarding alloy designations beginning with 0 (numeral zero). The above examples show that O (letter) has been used even though the original paper shows in all cases that the numberal (zero) is correct. This practice is causing confusion in filing reports and preparation of alloy handbooks.

Card 2/2

L 62600-65 EWP(z)/EWT(m)/EWP(b)/T/EWA(d)/EWP(t) MJW/JD

ACCESSION NR: AP5018180 UR/0148/65/000/007/0155/0160
669.15-194:669.26'74:621.785.6

21
20
B

AUTHOR: Bogachev, I. N.; Budrin, D. V.; Kondratov, V. M.; Potekhin, B. A.

TITLE: Complex method of determining the hardenability of austenitic steels

SOURCE: VIUZ. Chernaya metallurgiya, no. 7, 1965, 155-160

TOPIC TAGS: steel hardenability, austenite, steel quenching, steel hardening/30Kh10G10 steel

ABSTRACT: By hardenability of austenitic steels is meant the distance from the cooled surface at which a purely austenitic structure or a desired set of mechanical properties can be obtained. The hardenability of austenitic steels should not be characterized by the hardness alone; in determining the hardenability of the unstable austenitic steel 30Kh10G10, the authors used a complex method which involved a determination of the depth of the hardened layer from the mechanical properties, form of the break, microstructure, and phase composition obtained by x-ray analysis. In order to obtain high mechanical properties in cast 30Kh10G10 steel at the greatest possible depth, various heat treatments were carried out in which specimens in the form of plates were subjected to end-quenching with a sprayer. The depth of hardenability was found to be 64 mm. No carbides were present

Card 1/2

L 62600-65

ACCESSION NR: AP5018190

down to a depth of 38 mm. The results show that the method employed makes it possible to determine accurately the boundary of the hardened layer in austenitic steels. It was found that the structure of cast 30Kh10G10 steel consists of austenite and a certain amount of α phase, ϵ phase, and carbides, which reduce its resistance to cavitation. Cooling in a sprayer as compared to cooling in stationary water can increase the depth of the hardened layer by a factor of 1.6. Orig. art. has: 5 figures and 1 table.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural'sk Polytechnic Institute)

SUBMITTED: 27Oct 64 ENCL:00 SUB CODE: MM

NO REF SOV: 007 OTHER: 001

Card 2/2

L 62601-65 EWP(z)/EWT(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(t) MJW/JD

ACCESSION NR: AP5018181 UR/0148/65/000/007/0161/0165
669.15-194:669.26'74:621.78

AUTHOR: Bogachev, I. N.; Potekhin, B. A.; Kondratov, V. M.; Malinov, L. S.

TITLE: Effect of heat treatment on the mechanical properties of 30Kh10G10 austenitic steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 7, 1965, 161-165

TOPIC TAGS: steel hardening, austenite, martensite, steel mechanical property, heat treatment, plastic deformation / 30Kh10G10 steel

ABSTRACT: The study is concerned with finding the best heat treatment conditions for producing superior mechanical properties in 30Kh10G10 cast steel; for comparison, the mechanical properties of forged pieces were tested. The mechanical properties of cast and forged specimens were improved through a combined heat treatment (quenching from 1100C, again at 800C, cooling in water, and quenching again from 1100C) which raised the tensile strength by a factor of almost two and the plastic characteristics by a factor of three as compared to the cast state. The phenomena occurring during the heat treatment are described. The formation of martensite during deformation in the presence of an austenitic structure in the original state causes an increase in plasticity and a

Card 1/2

L 62601-65

ACCESSION NR: AP5016151

lowering of the yield point; if a considerable amount of martensite is obtained in the original structure by heat treatment or in the course of flow cooling of the casting, the steel has a high yield point and a reduced plasticity. The second quenching from 1100C after aging markedly improves the mechanical properties of the cast steel as a result of fragmentation of the grain. Unstable Fe-Mn austenitic steels such as 30Kh10G10 display a marked rise in yield point even under slight plastic deformation; thus, deformation by 1.5% stretching raises the yield point of 30Kh10G10 by 25%. This property must be considered in designing machine parts made of this steel. Orig. art. has: 2 figures and 4 tables.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural'sk Polytechnic Institute)

SUBMITTED: 16Mar65 ENCL: 00 SUB CODE: MM

NO REF SOV: 005 OTHER: 003

Card 2/2

POTEKHIN, B.A.; BOGACHEV, I.N.

Stress relaxation in chromium-manganese austenitic 30Kh10G10 steel. Fiz. met. i metalloved. 18 no.2:257-262 Ag '64. (MIRA 18:8)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova.

L 4183-66 EWT(m)/EWP(w)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) IJP(c) JD/HW

ACCESSION NR: AP5016532 UR/0126/65/019/006/0908/0914

53
50
B

AUTHOR: Bogachev, I. N.; Odinokova, L. P.

TITLE: Plastic deformation of titanium and its alloys at low temperatures

SOURCE: Fizika metallov i metallovedeniye v. 19, no. 6, 1965, 908-914

TOPIC TAGS: plastic deformation, titanium, titanium alloy, aluminum alloy, twinning

ABSTRACT: The mechanical properties, hardening, and the nature of plastic deformation of titanium and its alpha- and beta-alloys were studied at temperatures of +20, -40, -70, -96, and -196°C. Lowering the deformation temperature causes an increase in the strength of the alloys. Failure of the β-alloy at low temperatures occurs primarily along the grain boundaries. The mechanism of plastic deformation of the β-alloy does not change substantially as the temperature drops. The number of active slip planes is reduced, causing a decline of plastic properties with decreasing temperature. The plastic deformation of titanium involves slip and twinning. At room temperature, both processes make an equal contribution to the de-

Card 1/2

L 4183-66

ACCESSION NR: AP5016532

3

formation. Lowering the deformation temperature hinders slip and intensifies twinning. Twinning increases the plasticity of titanium and raises the hardening coefficient of the alloy by increasing the number of twinning boundaries. Alloying of titanium with aluminum hinders twinning and decreases the plasticity at low temperatures. Orig. art. has: 4 figures, 1 table.

ASSOCIATION: Ural'skiy politekhnicheskiy institut im. S. M. Kirova (Ural Polytechnic Institute)

SUBMITTED: 16Jun64 ENCL: 00 SUB CODE: MM

NO REF SOV: 007 OTHER: 004

Card 2/2

L 15199-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b) MJW/JD/WW

ACC NR: AP6002669 SOURCE CODE: UR/0126/65/020/006/0881/0888

AUTHOR: Filippov, M. A.; Bogachev, I. N.

ORG: Ural Polytechnic Institute im. S.M. Kirov (Ural'skiy politekhnicheskiy institut)

TITLE: Formation of deformation martensite in austenitic steels under conditions of explosive forming

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 6, 1965, 881-888

TOPIC TAGS: steel, austenitic steel, nickel steel, manganese steel, steel strengthening, explosive strengthening

ABSTRACT: Small specimens (30 x 30 x 6 mm) of austenitic steels 40N25 (0.42% carbon and 24.98% nickel) and 40G13 (0.41% carbon and 13.62% manganese) were austenitized at 1050C and water quenched. Small (1.5 g) charges of a powerful explosive were detonated on the surface of the specimens, which rested on a heavy austenitic-steel plate. The explosion formed small, round craters about 1.8 mm deep on the specimen surfaces and caused a sharp increase of microhardness in the zones adjacent to craters: up to 850 kg/mm^2 in 40G13 steel and 600 kg/mm^2 in 40N25 steel, compared to the respective initial microhardness of 210 and 180 kg/mm^2. Microscopic examination and x-ray diffraction patterns showed that in both steels, over 70% of austenite in the zones adjoining the craters was transformed to martensite; but the distribution of martensite

Card 1/3 UDC: 669.15;548.53

and, consequently, of microhardness along the depth of the zone followed a different pattern in each steel. In the 40G13 the maximum microhardness and the maximum amount of martensite was observed at the bottom of the crater (see Fig. 1), and in 40N25,

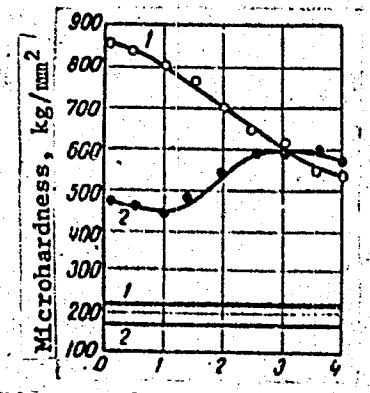

Fig. 1. Microhardness of 40G13 (1) and 40N25 (2) steels depending on the distance from the crater edge. Horizontal lines show initial microhardness

at a distance of 3 mm from the bottom. It is noted that the mechanism of martensite transformation and the structure of martensite formed under the effect of an explo-

L 15199-66
ACC NR: AP6002669

sion are similar to those observed at cooling well below the martensite point. The intensive strengthening of both steels, which could not be attained by other strengthening methods, results not only from martensite, but also from the strain hardening of austenite due partly to shock waves and partly to strain caused by martensitic transformation. Orig. art. has: 4 figures. [DV]

SUB CODE: 11, 13/ SUBM DATE: 20Jul64/ ORIG REF: 009/ OTH REF: 008/ ATD PRESS: 4189

Card 3/3

L 9399-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b)/EWA(h) IJP(c) JD

ACC NR: AP5026782 SOURCE CODE: UR/0286/65/000/017/0069/0069

INVENTOR: Bogachev, I. N.; Mints, R. I.; Petukhova, T. M.

ORG: none

TITLE: Bronze. Class 40, No. 174365

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 69

TOPIC TAGS: copper alloy, aluminum containing alloy, nickel containing alloy, cobalt containing alloy, manganese containing alloy, cavitation, bronze

ABSTRACT: This Author Certificate introduces a copper alloy with increased cavitation resistance containing 12.5—14.5% aluminum, 1—6% nickel, 1—4% cobalt, and 1—3% manganese.

[AZ]

SUB CODE: 11 / SUBM DATE: 20Mar63/ ATD PRESS: 4153

Card 1/1 nde UDC: 669.35'71'24'25'74

(N) L 12918-66 EWT(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) IJP(c) JD

ACC NR: AP6000998 SOURCE CODE: UR/0286/65/000/022/0063/0063

AUTHORS: Bogachev, I. N.; Mints, R. I.; Petukhova, T. M.

ORG: none

TITLE: Bronze. Class 40, No. 176426

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 63

TOPIC TAGS: bronze, aluminum, nickel, cobalt, manganese, copper

ABSTRACT: This Author Certificate introduces a bronze containing aluminum, nickel, and manganese. To increase its cavitation resistance, the bronze has the following chemical composition (in %): aluminum - 12.5—14.5; nickel - 1—6; cobalt - 1—4; manganese - 1—3; copper - remainder.

SUB CODE: 11/ SUBM DATE: 20Mar63

Card 1/1 HW UDC: 669.018.15

36 B

L 22779-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t) IJP(c) JD/HW/WB/JXT(MJW)/JH

ACC NR: AP6010306 (N) SOURCE CODE: UR/0136/66/000/003/0080/0082

AUTHOR: Bogachev, I. N.; D'yakova, M. A.

ORG: none

41
36
13

TITLE: Cavitation resistance of titanium-base alloys

SOURCE: Tsvetnyye metally, no. 3, 1966, 80-82

TOPIC TAGS: titanium alloy, alpha alloy, alpha beta alloy, beta alloy, alloy cavitation, cavitation resistance

ABSTRACT: A series of α-, α+β-, and β-titanium-base alloys have been tested for cavitation resistance. Phase composition was found to be a primary factor determining the behavior of alloys under conditions of cavitation. The lowest cavitation resistance was shown by straight α-alloys in which the weight loss in a 6-hr test amounted to 300 mg. The α-alloys strengthened by precipitated intermetallic compounds of the Ti_2Me type, such as alloys containing 28% Ni, 25% Co, 2% Al and 8% Co, or 3% Al and 9% Ni, were somewhat more resistant; their weight loss in a 20-hr test was 300 mg. Such alloys, however, have a poor or even very poor forgeability. In α+β alloys, resistance to cavitation depends on the amount of β-phase and on the degree of dispersion of α-particles. VT15 alloy heat treated to a structure containing 40% β and 60% α had

Card 1/2 UDC: 669.295:620.1

L 22779-66

ACC NR: AP6010306

5

a weight loss of 240 mg in a 25-hr test. With increasing content of the β-phase, the cavitation resistance increases. However, under certain conditions β-phase decomposes under the formation of the brittle ω-phase. Such a structure has a high resistance to cavitation but is susceptible to brittle failure. The formation of the ω-phase can be prevented by correct heat treatment, which for VT3-1, VT14, VT16, and Ti5Al8Mo alloys consists of annealing at 840—870C followed by quenching and tempering at 480—490C. Lower tempering temperatures do not eliminate the possibility of ω-phase formation, while higher temperatures cause coagulation of the α-phase particles and softening of the solid solution. Orig. art. has: 3 figures.

[DV]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 4229

Card 2/2 BK

L 26667-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t) IJP(c) JD

ACC NR: AP6010413 SOURCE CODE: UR/0126/66/021/003/0472/0474

AUTHORS: Bogachev, I. N.; Filippov, M. A.; Potekhin, B. A. 46 B

ORG: Ural Polytechnic Institute im. S. M. Kirov (Ural'skiy politekhnicheskiy institut)

TITLE: Investigation of plasticity of several austenitic steels subject to high velocity loads 18 19

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 3, 1966, 472-474

TOPIC TAGS: steel, austenitic steel, martensite / N28 steel, 40N25 steel, 2Kh18N9 steel, 67Kh7N7 steel, 30Kh10G10 steel, 47Kh10G8 steel elongation, plasticity, material deformation, martensitic transformation,

ABSTRACT: The plasticity and onset of martensite 18 rearrangement during dynamic and static elongation of the steels N28, 40N25, 2Kh18N9, 67Kh7N7, 30Kh10G10, and 47Kh10G8 was determined. The experimental procedure followed that described by 18 G. M. Kraft (Response of Metals to High Velocity Deformation, ASM, N.Y., 1961). The fraction of martensite in the specimens after deformation was determined by a ballistic magnetometer. The experimental results are tabulated. It was found that maximum increase in plasticity during dynamic elongation occurs for those steels which show the largest increase in martensite conversion. The rate of propagation of plastic deformation in nonreinforced steels in the initial stages of deformation is determined by the rate of martensite conversion. Orig. art. has: 2 tables.

SUB CODE: 11,20/ SUBM DATE: 02Jun65/ ORIG REF: 004/ OTH REF: 001

Card 1/1 BLG UDC: 534.222.2:620.172.22+669.15-194

ACC NR: AP6036438 SOURCE CODE: UR/0370/66/000/006/0068/0072

AUTHOR: Aleksandrov, V. L. (Sverdlovsk); Bogachev, I. N. (Sverdlovsk); Mints, R. I. (Sverdlovsk)

ORG: none

TITLE: Peculiarities in the behavior of austenitic steels under cyclic loading

SOURCE: AN SSSR. Izvestiya. Metally, no. 6, 1966, 68-72

TOPIC TAGS: ~~steel~~, austenitic steel, cyclic load, cyclic stress, chromium steel, manganese steel, ~~chromium~~ nickel steel/30Kh10G10 steel, 1Kh18N9T steel

ABSTRACT: A study was made of the behavior of chrome manganese and chrome nickel austenitic steels under cyclic loading. The study showed that 30Kh10G10 chromium manganese austenitic steel has a much greater resistance to cyclic loading than 1Kh18N9T chromium nickel austenitic steel, and that this difference is due to the different nature of the structural transformations which take place in them during cyclic loading. 30Kh10G10 chromium manganese austenitic steel is unstable under cyclic loading and decomposes, forming a specific structure which

Card 1/2 UDC: 621.788

ACC NR: AP6036438

is apparently responsible for the steel's high cyclic strength and resistance. The chemical composition and martensite points of the steels used are given in a table in the original article. [Based on authors' abstract] [SP]

SUB CODE: 11/SUBM DATE: 14Jun65/ORIG REF: 004/

Card 2/2

ACC NR: AP7000657 SOURCE CODE: UR/0126/66/022/005/0737/0743

AUTHOR: Aleksandrov, V. L.; Bogachev, I. N.; Mints, R. I.

ORG: Ural Polytechnic Institute im. S. M. Kirov (Uralskiy politekhnicheskiy institut)

TITLE: Cyclic strength of austenitic steels

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 5, 1966, 737-743

TOPIC TAGS: austenitic steel, chromium manganese steel, chromium nickel steel, manganese steel, nickel steel, fatigue strength, cyclic strength

ABSTRACT: The behavior of several austenitic steels under the effect of cyclic loading has been investigated. 30Kh10G10, 47Kh10G8 and 1Kh17AG10 chromium-manganese steels, 68Kh7N7 and 1Kh7N7 chromium-nickel steels, G38 manganese steel, and N36 nickel steel specimens, 2 x 5 mm in cross section, austenized at 1100C for 1 hr and water quenched, were subjected to alternating bend tests at a frequency of 50Hz. It was found that the damping ability of the metal structure is the most important factor affecting the service life of metal under conditions of high cyclic loads and resonance fatigue. Steels with unstable austenite have a higher cyclic strength than steels with stable austenite. The fatigue strength of the former is also higher than the static yield strength. Different types of austenite with the same stability have different strength and life service under cyclic loading. Chromium-manganese

Card 1/2 UDC: 669.15-194:539.43

ACC NR: AP7000657

austenites have higher cyclic strength than chromium-nickel austenites. Orig. art. has: 4 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 02Feb66/ ORIG REF: 011/ OTH REF: 001

Card 2/2

SHER, I.D., prof.,; TOLSTYKH, A.N. Prinimali uchastiye: RYBAKOVA, T.A.; BOGACHEV, K.K.; KULESHOV, F.M.; PETROV, A.I.; NADEZHDINA, A., red.; TELEGINA, T., tekhn. red.

[Accounting and operational technique in the Construction Bank; textbook]Uchet i operatsionnaia tekhnika v stroibanke; uchebnoe posobie. Kollektiv avtorov pod rukovodstvom I.D.Shera i A.N.Tolstykh. Moskva, Gosfinizdat, 1961. 215 p. (MIRA 14:12)
(Banks and banking—Accounting)

VERDEREVSKIY, Dmitriy Dmitriyevich; BOGACHEV, L., red.

[Methods of detecting and selecting disease-resistant biotypes from susceptible species and varieties of cultivated plants] Metody vyiavleniia i otbora immunnykh k bolezniam biotipov v sostave vospriimchivykh vidov i sortov kul'turnykh rastenii. Kishinev, Gos.izd-vo "Kartia moldovenieske." No.1. 1961. 72 p.
(MIRA 17:11)

L 52569-65 EWI(m)/EPF(c)/T Pr-4 DJ

ACCESSION NR: AP5009899 UR/0065/65/000/004/0039/0043

AUTHORS: Feygin, S. A.; Bogacheva, L. G.; Chernyy, Yu. I.

TITLE: Prospects for introducing new purification processes in oil production

SOURCE: Khimiya i tekhnologiya topliv i masel, no. 4, 1964, 39-43

TOPIC TAGS: petroleum industry, oil, distillation, lubricant, lubricating oil, filtration, adsorption dehydration, molecular adsorption, hydrogenation/ MS 20 residual oil

ABSTRACT: New processes for primary and secondary purification of crude oils are discussed. The two-stage de-asphaltizing of petrolem-asphalt by propane, combined with other purification methods, is recommended for the production of residual oils. This process results in an increased output of the products and a greater diversification of highly viscous oils. Because all the processes discussed produce similar results, the choice of procedure is determined by the oil quality required and by the available reagents. The duosol process is recommended for the production of residual oils of MS-20 type. Furfurol was widely used as a selective solvent in the production of distillate oil fractions from crudes low in tar and sulfur. The output of refined oils with furfurol purification exceeded by 5-6% the

Card 1/2

L 52569-65

ACCESSION NR: AP5009899

output of the phenol method, and consumed less energy. Because other processes differed little economically and technically from the furfurol process, their choice was also determined by the requirements of distillate oils. The adsorption purification method produced oils of the best color and coking capacity, and increased their output by 15%. The authors recommend that this process be further developed, that the production of synthetic adsorbents be increased and that the method of secondary contact purification be discontinued. The application of the deep hydrogenation at 50-70 atm pressure is also recommended for secondary purification of distillate and residual oils, especially at those plants with access to large quantities of hydrogen. The latter method is economical, improves oil quality, and can be applied to any type of crude and to the secondary products. Comparative production figures of oils purified by the various methods are tabulated. Orig. art. has: 3 tables.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: FP

NO REF SOV: 000 OTHER: 000

Card 2/2

USSR / Cultivated Plants. Grains. M-3

Abs Jour: Ref Zhur-Biol., 1958, No 16, 72915.

Author : Bogachev, M. F.; Tomson, E. M.
Inst : Belorussian Agricultural Academy.
Title : On the Problem of the Effectiveness of Different Methods of Basic Soil Cultivation Under Corn.

Orig Pub: Tr. Belorussk. s.-kh. akad., 1957, 23, No 2, 67-77.

Abstract: Three variants were studied of basic soil cultivation under corn: 1) common plowing (plowing at 20-22 cm), 2) plowing with a subsoiler (40-50 cm), 3) plowing without a blade grader (40-50 cm). Experiments were accompanied by a detailed characteristic of the physical indicators of the soil and the development of the root system of the corn. Results of one-year experiments (1955) showed that deep cul-

Card 1/2

BOGACHEV, M.I.

Studying the process of conditioning the human body to cold.
Opyt izuch.reg.fiziol.funk. no.3:218 '54. (MLRA 8:12)

1. Laboratoriya ekologicheskoy fiziologii Instituta fiziologii imeni I.P.Pavlova Akademii nauk SSSR.
(PHYSICAL EDUCATION AND TRAINING) (COLD--PHYSIOLOGICAL EFFECT)