"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

POZIN, M.Ye.; ZUBOV, V.V.; TERESHCHENKO, L.Ya.; TARAT, E.Ya.; PONOMAREV, Yu.L.

Solubility of nitric oxide in aqueous solutions of some salts. Izv. vys.ucheb.zav.;khim.i khim.tekh. 6 no.4:608-616 '63. (MIRA 17:2)

1. Leningradskiy tekhnologicheskiy institut im. Lensoveta. Kafedra tekhnologii neorganicheskikh veshchestv.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.V.; ANTIPINA, Ye.N.; CHERNYKH, N.N.

Temperature dependence of the magnetostriction of certain ordering alloys. Izv. vys. uchsb. zav; fiz. no.1:49-51 '63. (MIRA 16:5)

1. Kuybyshevskiy industrial'nyy institut imeni Kuybysheva.
(Magnetostriction) (Alloys)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.V.

Temperature dependence of certain magnetic properties of the Fe_3Al alloy. Izv.vys.ucheb.zav.; fiz. no.3:3-8 '61. (MIRA 14:8)

1. Kuybyshevskiy industrial'nyy institut im. V.V.Kuybysheva.
(Iron-aluminum alloys--Magnetic properties)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V. YA.

The patenting and drawing of steel wire. Sverdlovsk, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1945. 114 p. (51-38561)

TS270.Z8

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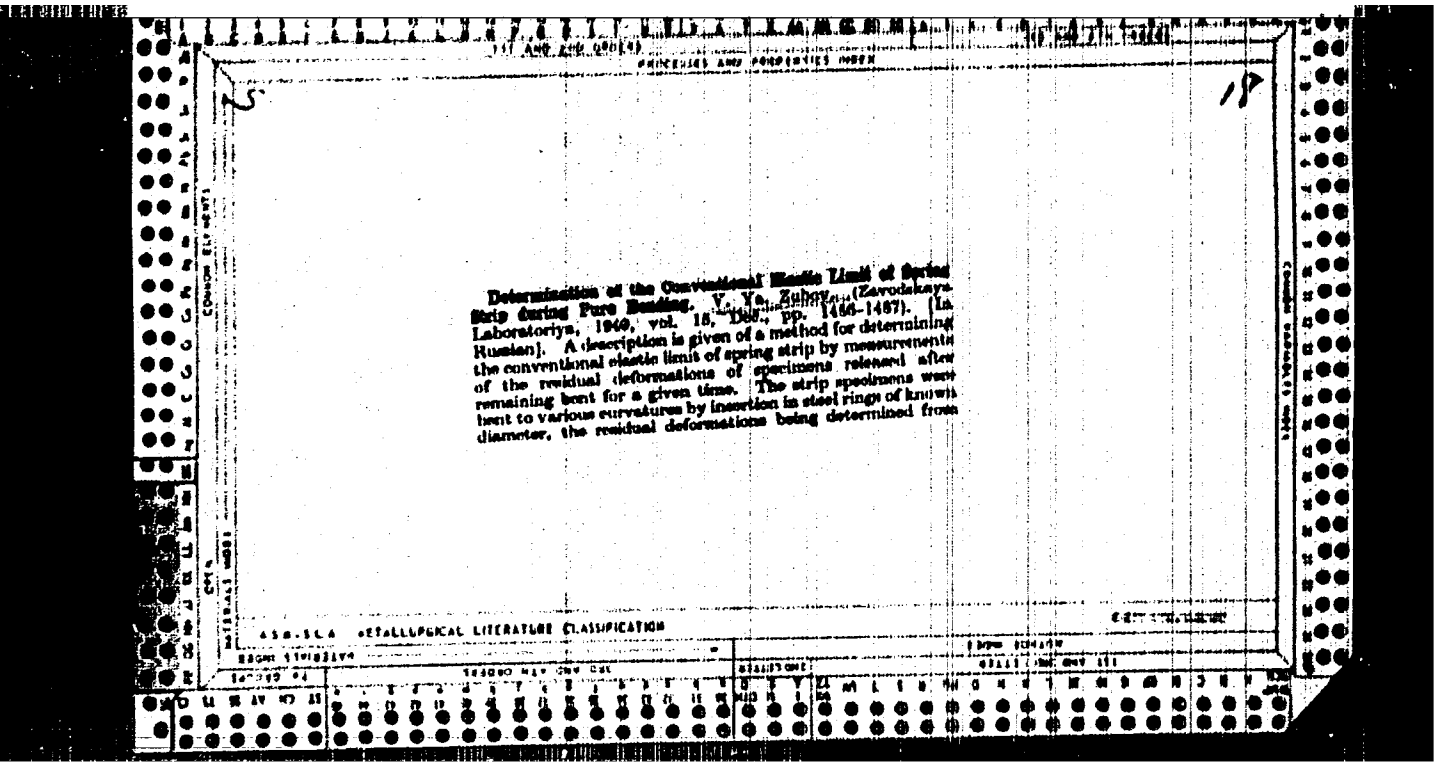

Determination of the Conventional Elastic Limit of Spring Strip during Pure Bending. V. Ya. Zuhov. (Zavodskaya Laboratoriya, 1949, vol. 15, Dec., pp. 1466-1467). [In Russian]. A description is given of a method for determining the conventional elastic limit of spring strip by measurements of the residual deformations of specimens relieved after remaining bent for a given time. The strip specimens were bent to various curvatures by insertion in steel rings of known diameter, the residual deformations being determined from

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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SOV/124-58-10-11895

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 10, p 159 (USSR)

AUTHORS: Zubov, V. Ya., Grachev, S. V.

TITLE: Relaxation Processes in a Steel Spring Strip (Relaksatsiya stal'noy pruzhinnoy lenty)

PERIODICAL: V sb.: Vopr. proyektir., izgotovleniya i sluzhby pruzhin. Moscow—Leningrad, Mashgiz, 1956, pp 216-229

ABSTRACT: The effect of heat treatment on relaxation processes at temperatures ranging from 100 to 600°C was studied on a spring strip with a cross section of 0.32x6.75 mm made of silicon steel EI1[illegible]2. Portions of the strip bent into a circular shape were inserted into steel rings of various diameters (the stresses in the strip did not exceed the elastic limit). After soaking at a certain temperature followed by a period of cooling, the strips were removed. The magnitude of "relieved" stresses was determined from the curvature of the strip. The intensity of stress reduction increased with increasing temperatures and increased with increasing magnitude of the initial stress. At a temperature of 550°C, the stresses were relieved completely by the mechanism of relaxation.

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SOV/124-58-10-11895

Relaxation Processes in a Steel Spring Strip

Minimal relaxation stability was exhibited by quench-hardened steel. The greatest relaxation stability at temperatures ranging from 150 to 350° was observed in quenched steel which had been tempered at 450°. Alloying of spring silicon steel with Mo and W tends to increase the relaxation stability both at room temperature and at elevated temperatures.

M. Ya. Shashin

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.Ya.

Relaxation testing of spring band. Zav.lab. 22 no.3:329-331 '56.
(MLRA 10:5)

1.Ural'skiy politekhnicheskiy inatitut im. S.M. Kirova.
(Steel--Testing)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Vitaliy Yakovlevich; GRACHEV, Sergey Vladimirovich

[Structure and properties of steel spring bands] Struktura i svoistva stal'noi pruzhinnoi lenty. Moskva, Izd-vo "Metallurgiia," 1964. 223 p. (MIRA 17:7)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Vitaliy Yakovlevich -- awarded sci degree of Doc Tech Sci for the 29 Jun 57 defense of dissertation: "Structural bases of the plasticity and elasticity of steal spring bands" at the Council, Ural Polytech Inst imeni Kirov; Prot No 14, 21 May 58.

(BMVO, 11-58,19)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

AUTHOR: Zubov, V. Ya. SOV/163-58-2-45/46

TITLE: The Kinetics of the Relaxation of the Tension in Hardened Steel (Kinetika relaksatsii napryazheniy v zakalennoy stali)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 2, pp. 245-248 (USSR)

ABSTRACT: Investigations of the relaxation at temperatures of 150, 200 and 250°C were carried out; the results obtained show that the character of the relaxation curves depend on the metastable, oversaturated solid solution of carbon in α-iron. The course taken by the relaxation curves in hardened steel demonstrates their similarity to the curves of the change of the carbon content in martensite according to temperature. The kinetics of the relaxation in hardened steel at increased temperature is analogous to the decomposition of the martensite at the same temperatures during hardening. The transformations occurring determine in martensite the kinetics of the relaxation during the heating of the hardened steel. The difference between the kinetics of the relaxation of the hardened steel and of steel after annealing is connected with the different course taken by the dif-

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The Kinetics of the Relaxation of the Tension in Hardened Steel

fusion processes. The slow decomposition of martensite leads to a hampering of the relaxation. There are 3 figures, 3 tables, and 5 references, 5 of which are Soviet.

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

SUBMITTED: October 4, 1957

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

SOV/163-58-2-46/46

AUTHORS: Zubov, V. Ya., Grachev, S. V., Grigor'yev, A. F.

TITLE: The Influence of the Normal and the Isothermal Treatment on the Relaxation Stability of Spring Steel (Vliyaniye obychnoy i izotermicheskoy obrabotki na relaksatsionnuyu stoykost' pruzhinnoy stali)

PERIODICAL: Nauchnyye doklady vysshoy shkoly. Metallurgiya, 1958, Nr 2, pp. 249-255 (USSR)

ABSTRACT: The relaxation stability of metals and alloys is to a great extent determined by their structure. In the present paper comparative investigations of the relaxation stability of spring steel of the types ÉI142 and 65A under normal and isothermal treatment are described. The effect of the residual austenite on the relaxation process was discussed. The relaxation stability of spring steel treated the normal and the isothermal way depends on the conditions of relaxation. At low relaxation temperatures of the steel with martensite structure the relaxation stability is greater than in the case of a steel having a structure as in the complete decomposition of austenite. The change of the relaxation stability of the isothermally treated

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

The Influence of the Normal and the Isothermal Treatment on the Relaxation Stability of Spring Steel

steel does not take a monotonous course at low temperatures. When the temperature of treatment is increased the relaxation stability first increases but then decreases again. Steel isothermally treated at high temperatures has the greatest relaxation stability at an increase in temperature. The residual austenite decreases the relaxation stability of the steel at low as well as at high relaxation temperatures, since at low temperatures a low resistance to plastic deformation exists, and at high temperatures a decomposition of the austenite takes place during the relaxation process. From this may be concluded that in the isothermal decomposition the presence of the residual austenite leads to a considerable decrease of the relaxation stability of the steel. There are 4 figures, 4 tables, and 9 references, 8 of which are Soviet.

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

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

AUTHORS: Zubov, V. Ya. and Grachev, S. V.

TITLE: Resistance to Relaxation of Spring Strip at Room Temperature (Soprotivleniye relaksatsii pruzhinnoy lenty pri komnatnoy temperature)

129-58-5-6/17

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 5, pp 20-23 (USSR)

ABSTRACT: A considerable number of instruments and mechanisms actuated by means of springs usually operate at temperatures approaching room temperature. The correctness of their readings and their reliability in operation depends mainly on the quality of the springs and one important property of the springs is their relaxation stability. A number of papers have been published on the relaxation stability of spring steels at elevated temperatures (Refs.1-4). In this paper the authors investigate the relaxation properties of spring strip of various grades of steel at room temperature under conditions of high bending stresses for which a method was used which was developed for investigating the relaxation stability of thin steel strip described in an earlier paper of one of the authors (Ref.5). The strip specimens are "charged" into rings, the diameter of which is so chosen

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Resistance to Relaxation of Spring Strip at Room Temperature

that the stresses do not exceed the bending strength of the material. There will be a gradual relaxation of the stresses of the strip in the rings. On removing the strip and determining the residual deformation as the direct elastic after effect it is possible to evaluate the relaxation by means of the following formula:

$$\sigma_r = E \frac{h(\rho_p - \rho_o)}{2 \cdot \rho_o \cdot \rho_p}$$

where h - the thickness of the strip;
ρ_o - the initial curvature radius of the strip;
ρ_p - curvature radius of the strip after relaxation.

The investigations were carried out using 0.32 x 6.75 mm specimens of the steels EI142, U10A and an experimental spring steel EI722 of the following composition: 0.71% C, 2.49% Si, 0.51% Mn, 0.62% Cr, 0.6% W, 0.2% Mo, 0.018% P and 0.02% S. The conditions of heat treatment are given. On the basis of the obtained results it is concluded that at room temperature the relaxation stability of the experimental steel, which has a higher Si content

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and is additionally alloyed with tungsten and molybdenum, is considerably higher than for the steels EI142 and U10A, the latter having the lowest relaxation stability. Hardened, non-tempered, steel of the three investigated grades showed a reduced relaxation stability at room temperature. This is attributed to the partial process of decomposition of martensite as a result of the long duration effect of the stresses.
There are 2 figures and 6 Soviet references.

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

AVAILABLE: Library of Congress.

Card 3/3 1. Springs-Stability-Test results

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SOV/126-6-6-18/25

AUTHORS: Zubov, V.Ya. and Grachev, S.V.

TITLE: Relaxation Stability of Spring Steel as a Function of the Degree of Stability of the Structure (Relaksatsionnaya stoykost' pruzhinnoy stali v zavisimosti ot stepeni stabil'nosti struktury)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 6, pp 1088 - 1094 (USSR)

ABSTRACT: It was established that the relaxation stability of hardened and softened steel changes non-monotonically and that there is a certain interval of tempering temperatures for which the relaxation stability of the steel is at a maximum. The intensity of relaxation processes and the degree of development of such processes are influenced strongly by transformations in the investigated material. These transformations may be due to decomposition of the solid solution, separation of one or another phase component from the solid solution, coagulation, recrystallisation, etc. This aspect of the process of relaxation has not been adequately studied. Certain data can be found from work relating to creep, the mechanism of which is very similar to that of relaxation but even there the

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Relaxation Stability of Spring Steel as a Function of the Degree of Stability of the Structure

available information is inadequate. The authors studied the influence of the degree of stability of the structure of spring steel strip on its relaxation stability under various temperature conditions. They investigated the influence of the temperature and the tempering time on the relaxation stability of spring steel. For the investigations, a standard silicon steel, EI142, was used and also an experimental 2.5% Si steel of the following composition: C 0.71%, Si 2.49%, Mn 0.51%, Cr 0.62%, Ni 0.17%, Mo 0.20%, W 0.6%, S 0.02% and P 0.018%. Strips of both steels were first hardened. For obtaining differing degrees of structural stability, the hardened strip was tempered at various temperatures and heating durations. The influence of each of these factors on the relaxation stability was investigated separately. The specimens of both steels were tempered at 150, 250, 350, 450, 550 and 650 °C for durations of 10 min. The elasticity limit of the tempered-strip specimens was tested according to a method described in earlier work of one of the authors (Ref 9). The test results are entered

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in Table 1, p 1089. The results of the relaxation tests are described and entered in graphs, Figures 2-9. It was found that an increase in the stability of the structure does not necessarily lead to a monotonic increase in the relaxation stability. Depending on the conditions of relaxation and the structural state of the steel, an increase in the stability of the structure may bring about a drop in the resistance of the material against relaxation. The role of the slip mechanism of relaxation will be the greater the higher the structural stability of the steel and the higher the initial stresses. The validity of a general relation can be discerned as regards the characteristic of the relaxation curves of two differing grades of spring steel. The relaxation stability of the experimental steel (denoted by EI722 in the paper) is higher than the relaxation stability of the steel EI142 for all the investigated preliminary tempering temperatures and relaxation temperatures.

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Relaxation Stability of Spring Steel as a Function of the Degree of Stability of the Structure SOV/126-6-6-18/25

There are 9 figures, 2 tables and 9 references, all of which are Soviet.

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

SUBMITTED: July 6, 1956

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

GRACHEV, S.V.; ZUBOV, V.Ya.

Plastic and elastic aftereffect in spring bands. Izv.vys.ucheb. zav.; chern.met. no.3:59-64 '60. (MIRA 13:4)

1. Ural'skiy politekhnicheskiy institut.
(Springs(Mechanism)) (Strains and stresses)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.Ya.; GRACHEV, S.V.; PESIN, Ya.A.

Stress relaxation during martensite transformations of residual austenite. Izv.vys.ucheb.zav.; chern.met. no.5:115-120 '60. (MIRA 13:6)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Metallography) (Strains and stresses)

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.Ya., doktor tekhn.nauk prof.; GRACHEV, S.V., inzh.

Improving the quality of steel spring strips. Stal' 20 no.9:849-851 S '60. (MIRA 13:9)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Heat treatment) (Springs (Mechanism)--Testing)

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S/137/62/000/005/092/150
A006/A101

AUTHOR: Zubov, V. Ya.

TITLE: Structure and properties of spring steel

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 5, 1962, 57, abstract 5I335 ("Tr. Konferentsii po metizn. prozv-vu, 1959", Chelyabinsk, 1961, 90 - 102)

TEXT: The author investigated the effect of basic factors on the ductility of strip in cold rolling, elasticity and relaxation resistance depending on the composition and structure of У 8 А (U8A), У 10 А (U10A) and ЭИ 142 (EI142) grade steel. Laminar Fe-carbides can be plastic-deformed in cold deformation of steel; subsequently their crushing takes place, depending on the plate dimensions, at more or less deformation. Martensite of quenched steel has low σ_b and σ_e values. Residual austenite reduces σ_e of both quenched and tempered steel. During tempering σ_e is mainly determined by processes occurring in tempering of martensite. Relaxation resistance of spring materials depends on the composition of steel, relaxation conditions, and heat treatment. Highest sensitivity to stress rela-

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

Structure and properties of spring steel

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A006/A101

xation is shown by quenched steel and steel tempered at low temperatures. A tempering temperature rise to 450°C increases relaxation resistance of spring material. Alloying of Si-steel with W and Mo raises considerably its relaxation resistance.

T. Rumyantseva

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V. Ya.; GRACHEV, S.V.; TSEYTLIN, A.M.

Stress relaxation during the tempering of high-speed steel.
Fiz. met. metalloved 11 no.3:465-466 Mr '61. (MIRA 14:3)

1. Ural'skiy politekhnicheskiy institut im. S. M. Kirova.
(Tool steel—Heat treatment)
(Strains and stresses)

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27929 S/133/61/000/006/014/017
A054/A129

AUTHORS: Zubov, V. Ya., Doctor of Technical Sciences, Sokolov, N. V., Candidate of Technical Sciences, Krasil'nikov, L. A., Grachev, S. V., Engineers

TITLE: Deformation of metastable austenite and strength of steel strip

PERIODICAL: Stal', 21 no. 6, 1961, 549-551

TEXT: As a result of extensive research new ways were found to increase the strength of steel. Based on P. P. Anosov's studies, V. D. Sadovskiy (Ref.2: L. V. Smirnov, Ye. N. Sokolkov and V. D. Sadovskiy: Proceedings of the Institute of the Physics of Metals UFAN, 1956, no. 18, 35-36) put forward the suggestion that the excellent mechanical properties of Damascus blades were due to a combination of forging and hardening. With this theory in mind and the knowledge that the strength of alloyed steels could be raised by plastic deformation of austenite in supercooled condition, a so-called "thermo-mechanical" treatment was established for 65Г (65G) and 3Н142 (EI142) type 2-mm thick spring wires. In the tests the wire was deformed (flattened) after heating until austenite formation and after cooling in tin bath from 380-400°C (Fig. 2). The strip (0.7 x 2.63 mm) processed by the new method in the laboratory was annealed at various

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Deformation of metastable austenite ...

temperatures. Next the strength limit, the quantity of residual austenite and the microstructure of the strips under hardened condition were examined. It was found that by tempering at a temperature of up to 350°C with a holding time of 5 minutes the strength limit of EI142 steel increased to 300 kg/mm^2. Maximum strength for 65G steel (280 kg/mm^2) was obtained at a lower annealing temperature (300°C, holding time: 5 minutes). The transformation of austenite in 65G steel during annealing takes place more quickly than in EI142 steel. At 300°C and a holding time of 5 minutes the amount of residual austenite is no more than 10% in 65G steel, while at 360°C and a holding time of 1 minute nearly the entire quantity of austenite will be transformed. The microstructure of the test steels after flattening (with supercooled austenite and upon cooling at room temperature) displays elongated, dark grains with curved sliding surfaces in dense arrangement. These are evidently the products of the second stage of austenite transformation, which develops under the effect of plastic deformation on the disintegration of supercooled austenite. The tests were carried out with the cooperation of Engineer Yu. P. Surkov and Technician A. G. Lysenko. There are 5 figures and 7 references: 4 Soviet-bloc and 3 non-Soviet-bloc.

ASSOCIATION: Beloretskiy staleprovolochnyy zavod (Beloretsk Steel-Wire Plant)
Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

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E073/E483

1.1700 1454, 1045

AUTHORS: Zubov, V.Ya., Doctor of Technical Sciences, Grachev, S.V., Surkov, Yu.P., Engineers

TITLE: Influence of thermomechanical treatment on the strength of steel wire

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no.1, 1962, 20-22

TEXT: The authors studied the possibility of using thermo-mechanical treatment in the drawing of carbon- and low-alloy steel wire (L.A.Krasil'nikov and A.G.Lysenko participated in the experiments). The chemical compositions (%) of the steels investigated are given as follows:

	C	Mn	Si	Cr	Ni	Cu	P	S
У7А (U7A)	0.71	0.27	0.21	0.08	0.10	0.11	0.020	0.025
У10А (U10A)	1.01	0.20	0.18	0.12	0.12	0.20	0.019	0.006
65Г (65G)	0.66	0.98	0.23	0.09	0.20	0.10	0.019	0.023
ЭИ142 (EI142)	0.66	0.50	1.67	0.33	0.10	-	0.009	0.017

The initial wire diameters were 1.95 and 2 mm. The wire was heated for the drawing operation to 920 to 940°C by passing an

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Influence of thermomechanical ...

electric current through it and cooled in a lead bath to 320 - 350°C. The speed of movement of the wire was 10 m/min. The wire was deformed in a single pass (short incubation period) by 5 to 32%, using a soap-graphite lubricant. The final cooling after drawing was in air. After this, thermomechanical treatment specimens of the wire were tempered under laboratory conditions at 100 to 500°C with a holding time of 1.5 min. The strength of the wire drawn whilst the austenite was in the super-cooled state was very high. It was highest for the steel EI142, i.e. 306 kg/mm^2 (32% reduction and tempering at 350°C for 3 min). Further experiments were carried out exclusively on this material. The hardness after thermomechanical treatment was higher by about 4 H_{RC} units than for the same material quenched in the ordinary way. In addition, hardness of thermomechanically-treated material decreased more slowly with increasing tempering temperature than that of the same material after step-wise quenching. These differences were attributed to smaller grain-size of martensite and presence of strain-hardened austenite in thermomechanically treated steel. Even after

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electric current through it and cooled in a lead bath to 320 - 350°C. The speed of movement of the wire was 10 m/min. The wire was deformed in a single pass (short incubation period) by 5 to 32%, using a soap-graphite lubricant. The final cooling after drawing was in air. After this, thermomechanical treatment specimens of the wire were tempered under laboratory conditions at 100 to 500°C with a holding time of 1.5 min. The strength of the wire drawn whilst the austenite was in the super-cooled state was very high. It was highest for the steel EI142, i.e. 306 kg/mm^2 (32% reduction and tempering at 350°C for 3 min). Further experiments were carried out exclusively on this material. The hardness after thermomechanical treatment was higher by about 4 H_{RC} units than for the same material quenched in the ordinary way. In addition, hardness of thermomechanically-treated material decreased more slowly with increasing tempering temperature than that of the same material after step-wise quenching. These differences were attributed to smaller grain-size of martensite and presence of strain hardened austenite in thermomechanically treated steel. Even after

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Influence of thermomechanical ...

3 minutes tempering at relatively high temperatures (450 to 500°C), hardness of thermomechanically treated steel was practically equal to that of the same material after the conventional hardening treatment. The strength of the wire increased with increasing reduction but there was a drop in strength after reductions not exceeding 6 to 8%. If reductions of the order of 30% are used (followed by tempering for 1 min at temperatures not exceeding 350°C) it is possible to produce thermomechanically treated wire with a strength of the order of 300 kg/mm^2. There are 5 figures, 1 table and 1 Soviet-bloc reference.

ASSOCIATION: Ural'skiy politekhnicheskiy institut
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ACCESSION NR: AR4041615 S/0137/64/000/005/I054/I055

SOURCE: Ref. zh. Metallurgiya, Abs. 5I318

AUTHOR: Grachev, S. V.; Zubov, V. Ya.

TITLE: Relaxation of stresses in austenitic steels

CITED SOURCE: Sb. Relaksats. yavleniya v met. i splavakh. M., Metallurgizdat, 1963, 309-312

TOPIC TAGS: stress relaxation, austenitic steel, shear mechanism, structural mechanism

TRANSLATION: Relaxation stability of austenitic steel 3Kh18N10S3, 4Kh18N15S2V2M, 2Kh18N9 and EI481, subjected to plastic flow and deformation aging at different temperatures was investigated. Tests on relaxation of stresses were conducted on samples having form of tape with section 0.36 x 4.5 mm and wire 0.5 mm in diameter. During calculation of stresses change of modulus E during heating was considered.

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whose value was predetermined by dynamic method. Dependency was constructed of stress removed during relaxation of stress on temperature of pretempering of steel. Process of relaxation of stress of workhardened and aged steel proceeds basically under the influence of two mechanisms of relaxation: shear, connected with change of elastic limit during aging, and structural, connected with removal of distortions of lattice, deformation aging and inverse $\alpha \rightarrow \gamma$-transformation in process of relaxation of stress. Up to temperature of tempering of 400 - 500° increase of relaxation stability of steel with increase of temperature is observed. Maximum of relaxation stability corresponds to the greatest strength of steel. Further increase of temperature of tempering causes lowering of relaxation stability. In workhardened steel (and also after low-temperature tempering) significant metastability of structure is kept, which causes in process of relaxation of stress at increased temperatures flow of additional processes stabilizing the structure and promoting relaxation of stress. The role of these processes is the higher, the greater the difference between temperature of relaxation of stress and temperature of preliminary tempering.

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ZUBOV, V.Ya.; BASKAKOV, A.P.; GRACHEV, S.V.; ZAVAROV, A.S.; MALIKOV, G.K.

Characteristics of wire patenting in a fluidized bed. Izv. vys. ucheb. zav.; chern. met. 8 no.10:116-119 '65.
(MIRA 18:9)

1. Ural'skiy politekhnicheskiy institut.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.Ya.; GRACHEV, S.V.; RYBAKOVA, M.F.; KIR'YANOVA, N.P.

"Hereditary" properties of thermomechanically treated steel. Fiz. met. i metalloved. 20 no.3:424-427 S '65. (MIRA 18:11)

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

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L 46284-66 EWT(m)/EWP(w)/T/EWP(k)/EWP(t)/ETI IJP(c) JD/HW

ACC NR: AP5025328 SOURCE CODE: UR/0126/65/020/003/0424/0427

AUTHOR: Zubov, V. Ya.; Grachev, S. V.; Rybakova, M. F.; Kir'yanova, N. F.

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

TITLE: Problems of "heredity" of properties from thermomechanical treating of steel

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 3, 1965, 424-427

TOPIC TAGS: mechanical heat treatment, spring steel, metal property, annealing, tempering, durability, elasticity, hardness, toughness

ABSTRACT: The effect of additional tempering and annealing on thermomechanically treated samples of spring strip was studied and the secondary treatment was shown to eliminate the favorable effects of the thermomechanical process. Samples of 0.4 x 4mm EI142 and U7A steel strip were austenized at 900C, precooled at 320C, rolled, and additionally austenized at 860C and 7.2 m/min rate for approximately 30 sec, or at 860C in oil. Prior to the additional tempering some samples were annealed at 450—550C or at 300C. All samples, either after the primary thermomechanical treatment or after the additional heat treatment, were annealed 1—5 min at 200—500C and tested for strength, elasticity, toughness, and hardness. Samples, which had been tempered and annealed, but not mechanically treated, were similarly tested.

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ACC NR: AP5025328

Additional heat treating decreased the mechanical properties and the amount of residual austenite to the level of strips obtained by ordinary heat treating. Thus, no retention of favorable properties occurs in the additional tempering process, whereas some unfavorable properties are preserved, causing an increase in brittleness at low annealing temperatures. Orig. art. has: 4 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 24Sep64 / ORIG REF: 009/ OTH REF: 001

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

L 41622-66 EWT(m)/EWP(k)/EWP(w)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6013359 (A) SOURCE CODE: UR/0370/66/000/002/0076/0084

AUTHOR: Zubov, V. Ya. (Sverdlovsk); Baskakov, A. P. (Sverdlovsk); Grachev, S. V. (Sverdlovsk); Zavarov, A. S. (Sverdlovsk); Antifeyev, V. A. (Sverdlovsk)

ORG: none

TITLE: Patenting of wire in a fluidized bed

SOURCE: AN SSSR. Izvestiya. Metally, no. 2, 1966, 76-84

TOPIC TAGS: ~~fluidized bed~~, patenting, wire, ~~high~~ carbon steel, metal heat treatment

ABSTRACT: The possibility of constructing an integrated unit for patenting wire in which the heating and cooling of the wire are carried out in a fluidized bed of fine-grained material was studied on specimens of U7A, U8A, U9A, and EI-142 steels. The use of a fluidized bed made it possible to increase the rate of the patenting process by a factor of up to 6, or at the same rate to correspondingly reduce the length of the heating systems as compared to the existing fuel-oil and electric furnaces. By burning gas in a fluidized bed where oxygen is deficient, a nonoxidizing atmosphere can be created, so that the decarburization and scaling on the wire surface are eliminated; in addition, the patenting can be performed at high temperatures under these conditions, and thus the strength characteristics of the patented wire and hence the mechanical properties of the drawn wire can be markedly improved. High-temperature heating during patenting increases the stability of austenite, and hence, leads to a

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ACC NR: AP6013359

greater supercooling for the same temperature of the cooling medium as compared to the usual heating to 920°. This makes it possible to patent wire with large cross sections (8-10 mm) in a fluidized bed. Patenting of high-carbon steel (U12A) in this manner produced drawn wire with a much greater tensile strength than that obtained in conventionally patented steels (U7A, U8A, U9A). Orig. art. has: 5 figures and 7 tables.

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Card 2/2 hs

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L 44401-66 EWT(m)/EWP(w)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6023640 SOURCE CODE: UR/0149/66/000/002/0129/0134

AUTHOR: Zubov, V. Ya.; Grachev, S. V.; Kirillov, Yu. L.; Spiridonova, L. M.; Norkina, E. B.

ORG: Department of Metallurgy, Ural Polytechnic Institute (Kafedra metallovedeniya Ural'skiy politekhnicheskiy institut)

TITLE: Study of mechanical properties and relaxation stability of Cu-Ti alloys

SOURCE: IVUZ. Tsvetnaya metallurgiya, no. 2, 1966, 129-134

TOPIC TAGS: copper containing alloy, titanium containing alloy, chromium containing alloy, mechanical property, tensile strength, elastic modulus, stress relaxation, temperature dependence

ABSTRACT: The effect of certain factors of stress relaxation and other mechanical properties of five Cu-Ti alloys was studied. The alloys had Ti contents ranging from 1.10 to 5.50%; two of the alloys had Cr contents of 0.52 and 1.00%. After vacuum melting and remelting, 60 kg ingots were reduced to strip (6 mm wide by 0.4 and 0.25 mm thick) which was heated to 860°C for 1 hr, quenched into water and cold worked 20, 40, 60 and 80%. Aging was carried out at 300, 350, 400, 450 and 500°C for 1 to 5 hrs. The best strengths were obtained by aging at optimal temperatures for 2 hrs. Tensile strengths and relative elongations are given as functions of aging temperature for all alloys in

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the quenched and quenched + 60 % deformed condition. The highest strength (118 kg/mm^2) was for 5.50% Ti + 0.52% Cr additions. Elastic moduli and electroconductivities for all alloys after quenching + 40% deformation are given. Maximum moduli were observed at aging temperatures of 400-450°C and for all alloys the limit was 60-70 kg/mm^2. The best heat treatment, resulting in optimum combinations of strength and ductility, was obtained after deforming the quenched alloys 40-60% and aging at 400-450°C. These properties are considered to be ideal for replacing Cu-Be alloys used in springs. Alloying of Cu with Ti and Cr increased the electrical conductivity after quenching, however, this dropped considerably upon aging as a result of second phase decomposition. The elastic modulus, determined by the dynamic method, is given as a function of aging temperature and compared with beryllium bronze BrB2. This modulus rose sharpest for BrB2 indicating a faster decomposition of the solid solution. By increasing the Ti content the dynamic modulus decreased, probably as a result of a lowered interatomic bonding. Relaxation tests (relative relaxation stability as a function of time) were run at 200 and 400°C and the results were compared to BrB2. The Cu-Ti alloys had 4-15 times the relaxation stability at 400°C of BrB2. Again the best alloy was the 5.50% Ti + 0.52% Cr. Orig. art. has: 5 figures, 1 table, 1 formula.

SUB CODE: 11,20/ SUBM DATE: 06Oct64/ ORIG REF: 006

Card 2/2 egh

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AP6023046 SOURCE CODE: UR/0148/66/000/004/0128/0132

AUTHOR: Zubov, V. Ya.; Popova, L. Ye.; Baraz, V. R.

ORG: Ural Polytechnic Institute (Ural'skiy politekhnicheskiy institut)

TITLE: Effect of manganese and silicon on the transformation of supercooled austenite in cobalt steel

SOURCE: IVUZ. Chernaya metallurgiya, no. 4, 1966, 128-132

TOPIC TAGS: cobalt steel, alloy steel, manganese, austenite transformation, temperature dependence, metallographic examination, metal hardening

ABSTRACT: The effects of manganese and silicon additions on the transformation characteristics of cobalt steel were studied. A 0.7% carbon steel was alloyed with Co, Co and Si, or Co and Mn; in all, 9 alloys were tested. Isothermal transformation curves are given for each steel. The steels were austenitized at 900°C for 3 min. Cobalt with or without other alloying elements decreased the stability of austenite in all subcritical temperature intervals. Intermediate transformations occurred in all steels. Cobalt promoted the formation of a thin ferrite-carbide mixture with a high degree of hardness. Depending on the austenitic transformation temperature in the subcritical region, different methods could be developed for forming a definite type of structure having particular properties: a) sorbite at transformation temperatures of 550-650°C;

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ACC NR: AP6023046

b) a mixture of troostite and bainite at 450-500°C; and c) bainite at temperatures below 400°C. Microstructures of each of the above transformation products were shown. The hardnesses of transformation products formed at 400-600°C are given for 6 of the steels. The hardness change as a function of transformation time went through a maximum at 0.5 min for transformation temperatures of 400, 450 and 500°C. This was explained by the diffusion decomposition of supersaturated ferrite; the decomposed carbon entered the untransformed austenite which gave off carbides. This also accounted for the lower hardness of martensite formed during subsequent quenching. Orig. art. has: 3 figures, 2 tables.

SUB CODE: 11/ SUBM DATE: 26Mar65/ ORIG REF: 002/ OTH REF: 002

Card 2/2 egh

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ACC NR: AP6021071 (A) SOURCE CODE: UR/0148/66/000/006/0131/0136

AUTHOR: Zubov, V. Ya.; Baraz, V. R.

ORG: Ural Polytechnic Institute (Ural'skiy politekhnicheskiy institut)

TITLE: Features of the structure and properties of cobalt-treated patented wire

SOURCE: IVUZ. Chernaya metallurgiya, no. 6, 1966, 131-136

TOPIC TAGS: cobalt treated steel, patented wire, mechanical property, temperature dependence, phase composition / 75K2 steel, 75K3 steel, 75K4 steel, U8A steel

ABSTRACT: Considering that cobalt markedly accelerates the decomposition of supercooled austenite, the study of the effect of treatment with cobalt on the mechanical properties of patented wire is of major interest. Accordingly, the authors investigated Co-treated steels 75K2, 75K3 and 75K4 (containing 1.84, 3.16 and 4.11% Co, respectively), along with Co-free U8A steel, that were austenitized at 950°C for 3 min and subsequently patented in a lead bath at 350, 400, 450, 500, 550 and 600°C for 1 min in each case. A study of the isothermal transformation of supercooled austenite established a characteristic feature which was absent only in the Co-free steel: a distinct second peak occurs on the kinetic curve of decomposition of the

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ACC NR: AP6021071

austenite; this means transformation of the austenite in the upper and intermediate regions of subcritical temperatures. The curves of mechanical properties as a function of lead-bath temperature display an unusual shape (Fig. 1): as the patenting temperature increases, the

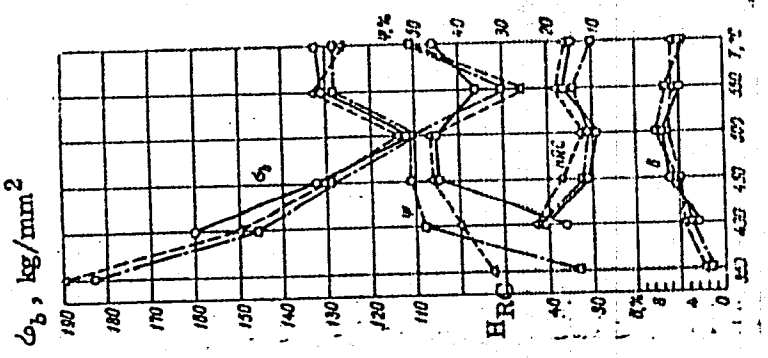

Fig. 1. Effect of lead-bath temperature on the mechanical properties of patented wire: ○ - 75K2; □ - 75K3; △ - 75K4

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ACC NR: AP6021071

strength of specimens at first decreases but later rises and reaches a maximum, after which it decreases again. When the temperature reaches 500°C the structure of the specimens becomes transformed into a coarse bainitic structure consisting of acicular ferrite and a ferrite-carbide mixture. Hence the decomposition follows the pattern of both pearlitic and intermediate types of transformation. At >550°C there forms a gradually increasing proportion of sorbite. Patenting temperature influences greatly the mechanical properties of Co-treated wire, as was revealed by tests of cold-drawn wire specimens that had been patented at 450, 500 and 600°C (1.2 min). The specimens displaying the highest strength and plasticity proved to be those patented at 600°C (i.e. specimens with sorbitic structure): their strength indices are 40-50 kg/mm^2 higher than those of Co-free U8A steel, and their plasticity then still remained at a satisfactory level. Thus, treatment of steel with cobalt enhances the strength properties of cold-drawn wire compared with Co-free wire and the plastic properties of Co-treated steel are not inferior to those of carbon steel. Orig. art. has: 6 figures, 1 table.

SUB CODE: 11, 20, 13/ SUBM DATE: 08Oct64/ ORIG REF: 002/ OTH REF: 001

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ACC NR: AP7002742 SOURCE CODE: UR/0126/66/022/006/0917/0923

AUTHOR: Tseytlin, A. M.; Zubov, V. Ya.

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

TITLE: Effect of plastic deformation on the physical properties of ferronickel alloys treated with titanium

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 6, 1966, 917-923

TOPIC TAGS: ~~ballistic~~ magnetization saturation ~~meter~~, x ray spectral analyzer, plastic deformation, iron nickel alloy, titanium / ~~BS-3 ballistic magnetization saturation meter~~, URS-50IM x ray spectral analyzer

ABSTRACT: Treatment of invars with additional alloy elements is known to markedly influence the effect of plastic deformation on physical properties. In this connection the authors investigated the effect of plastic deformation on the magnetic elastic properties and lattice constant of austenite of Fe-Ni (30-47% Ni) alloys treated with 0.6, 2.2 and 4 wt.% Ti. Alloys of this kind, hardenable by aging following quenching or plastic deformation, are widely used in practice to attain a near-zero thermoelastic coefficient, a low coefficient of thermal expansion,

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etc. Wire specimens (diameter 5 mm) and strip (0.32x4.0 mm) of the alloy were subjected to plastic deformation by homogenizing (water quenching from 1000°C) and drawing with 22, 52 and 84% reduction in area, after which they were heated to 1000°C for 2 hr and again water-quenched (to prevent the segregation of excess intermetallic compounds). Magnetization saturation I_s was measured with the aid of a BU-3 ballistic device; electrical resistivity ρ, by means of a double-bridge circuit; the ferromagnetic Curie point θ_c, according to the sloping segment of the magnetization-temperature curve; and Young's modulus E, according to the resonance frequency of transverse oscillations. The lattice constant a of austenite was determined with the aid of Fe K_α-radiation (URS-50IM device) on recording the {311} line. Findings: plastic deformation markedly increases I_s and θ_c, this increase being the greater the higher the Ti content and the lower the Ni content and (for θ_c) the higher the degree of deformation of the alloy are. By contrast, ρ decreases with increase in Ti content and decrease in Ni content. The marked increase in θ_c in low-Ni invars containing 4% Ti and having an 84% deformation causes an anomalous change in the temperature dependence of Young's modulus E (Fig. 1). In the alloy with 0.6% Ti, as in binary invars, plastic deformation reduces the positive slope of the E-temperature curve, whereas in the high-nickel (35% Ni) alloy with 4% Ti (N35T4 alloy) 84% deformation increases θ_c by roughly 70°, which increases the positive change in E with temperature and markedly broadens the temperature range of the anomaly. Thus it may be said that plastic

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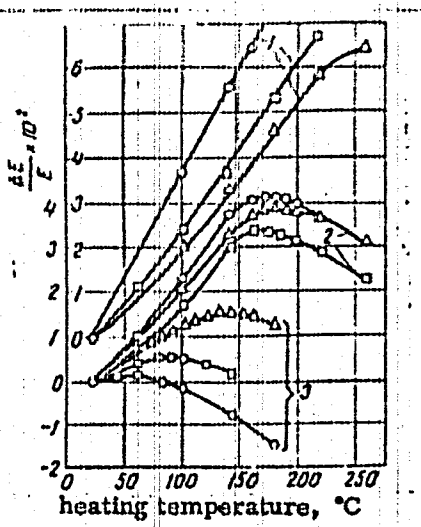

Fig. 1. Relative increase in Young's modulus on heating of specimens of the alloys N36T (1), N36T2 (2) and N35T4 (3) following various types of thermomechanical treatment

Δ - 84% deformation; □ - 22% deformation; ○ - 22% deformation and quenching

deformation enhances the "invarness" of Fe-Ni-Ti alloys. All these changes in physical properties apparently are associated with the concentration anomalies in invars, due to the special nature of these alloys. It appears that the negative exchange interaction between neighboring Fe ions occurring at Ni concentrations of less than 40% leads to the formation and growth of antiferromagnetic regions with an extremely low Neel point and this results in the sharp de-

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crease in magnetization and Curie point with decrease in Ni content in the invars. Orig. art. has: 5 figures, 2 tables.

SUB CODE: 11 , 20/ SUBM DATE: 09Aug65/ ORIG REF: 012/ OTH REF: 008

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ACC NR: AP6036404 SOURCE CODE: UR/0148/66/000/011/0105/0109

AUTHOR: Tseytlin, A. M.; Zubov, V. Ya.; Doroshek, S. I.

ORG: Ural Polytechnic Institute (Ural'skiy politekhnicheskiy institut)

TITLE: Effect of titanium on the physical properties of iron-nickel alloys

SOURCE: IVUZ. Chernaya metallurgiya, no. 11, 1966, 105-109

TOPIC TAGS: iron nickel alloy, titanium, metal physical property, magnetic property, Curie point, Young modulus

ABSTRACT: Anomalies of physical properties in binary invars correspond to the region of concentrations adjoining the boundary of irreversible $\gamma - \beta$ transformation. It has been shown (S. I. Doroshek. FMM, 1964, t. 17, vyp. 14, s. 638) that in certain cases a relationship exists between the effect of alloy elements on the stability of austenite and the position of the anomalies. In this connection, the authors investigate the variation in the concentration dependencies of a number of the physical characteristics of invars under the influence of titanium, which is widely employed as a hardening additive in alloys with special elastic properties. Since under conditions of dispersion hardening the influence of titanium on such anomalies

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is largely determined by the change in the composition of the solid solution with segregation or dissolution of the excess intermetallic compound, single-phase Fe-Ni-Ti alloys (30-46 wt.% Ni; 0.6, 2.2 and 4% Ti plus 0.02-0.05% each of C, Mn, Si, Al, Cr, Co, P, S, with Fe as the remainder) in deformed and recrystallized state were investigated. Measurements of physical properties (Young's modulus, temperature variation, Curie point) were performed on specimens of 5 mm diameter. The lattice parameter of the γ-solid solution was measured by the ionization method on recording the line (311); the presence of the α-phase was fixed according to the line (211). Findings: the Curie point falls with increasing content of Ti (Fig. 1) and hence

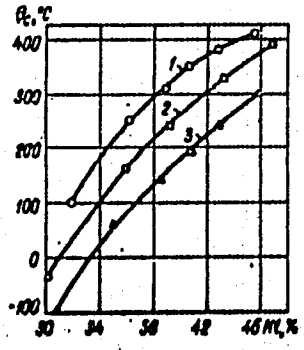

Fig. 1. Effect of Ti on Curie point

1 - 0.6% Ti; 2 - 2.2% Ti; 3 - 4% Ti

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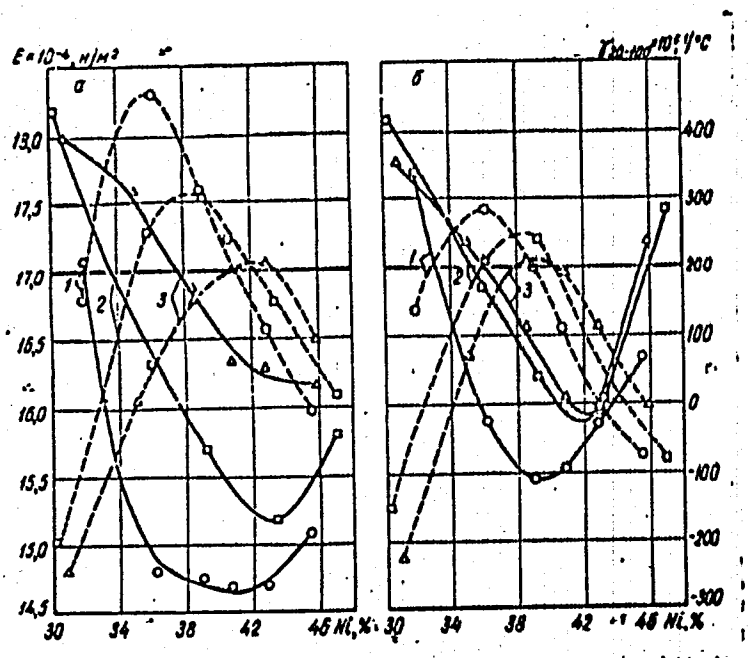

Fig. 2. Concentration dependencies of Young's modulus E and its temperature coefficient γ in Fe-Ni-Ti alloys following quenching from 1000°C (a) and 22% deformation (b): 1 - 0.6% Ti; 2 - 2.2% Ti; 3 - 4% Ti; ——— for E; - - - - - for γ

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ACC NR: AP6036404

Fe-Ni-Ti alloys must have a higher Ni content in order to display the same ferromagnetic properties as binary invars. Ti weakens the elastic anomaly associated with strictional changes in the dimensions of ferromagnetics at temperatures below the Curie point. Thus an increase in Ti content leads to an appreciable rightward shift of Young's modulus E and of the maximum of the thermoelastic coefficient γ in recrystallized state (Fig. 2). Since the addition of Ti reduces the Curie point and magnetization saturation, it also must reduce the linear magnetostriction (proportional to the square of magnetization); this apparently accounts for the partial elimination of elastic anomaly under the influence of Ti; this also accounts for the anomaly of the lattice parameter. Orig. art. has: 3 figures.

SUB CODE: 11, 20/ SUBM DATE: 02Apr66/ ORIG REF: 006/ OTH REF: 005

Card 4/4

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.Ya.; BASKAKOV, A.P.; GRACHEV, S.V.; MALIKOV, G.K.; ZAVAROV, A.S.

Patenting in a fluidized bed with pilot plant equipment. Stal' 25 no.7:664-665 Jl '65. (MIRA 18:7)

1. Ural'skiy politekhnicheskiy institut.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

GRACHEV, S.V.; ZUBOV, V.Ya.

Effect of structural stability on stress relaxation in alloys.
Fiz. met. i metalloved. 18 no.6:909-914 D '64.
(MIRA 18:3)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

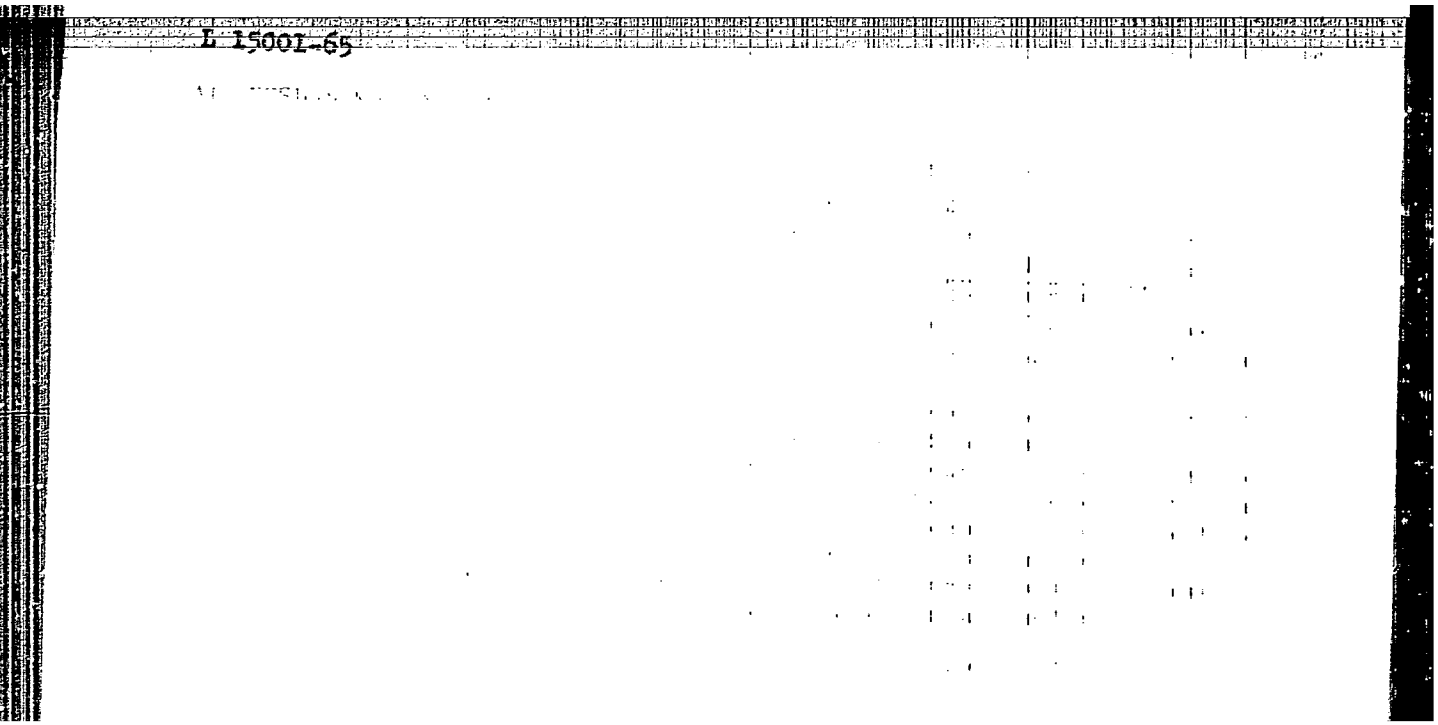
ZUBOV, V.Ya.; KRASIL'NIKOV, L.A.; KRASAVINA, T.N.

Axial stresses in steel wire and their relaxation during tempering. Izv. vys. ucheb. zav.; chern. met. 8 no.2:125-130 '65. (MIRA 18:2)

1. Ural'skiy politekhnicheskiy institut.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5



APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

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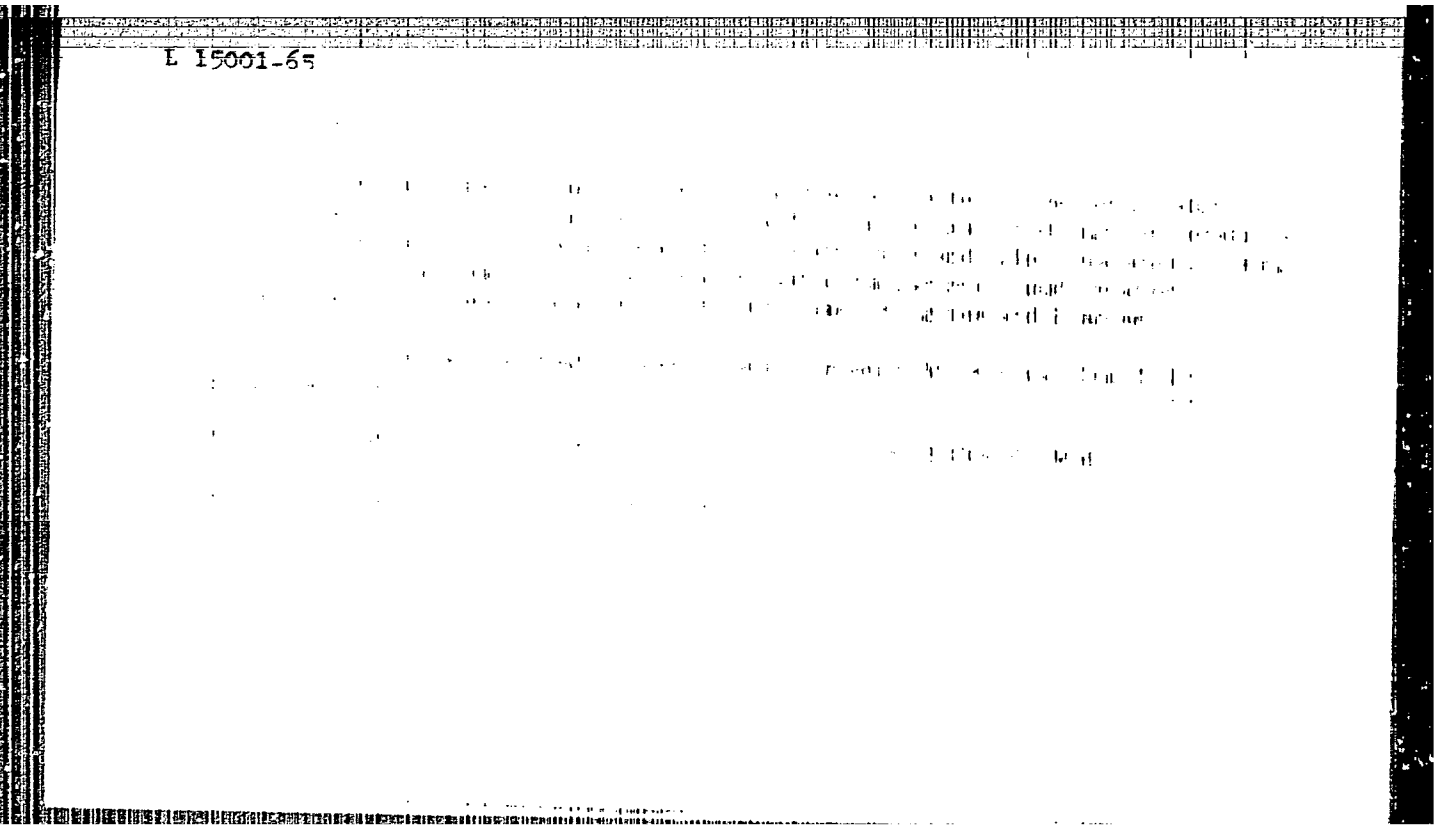

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

GRACHEV, S.V.; ZUBOV, V.Ya.

Stress relaxation in hardened steel in the first stage of tempering.
Fiz. met. i metalloved. 15 no.6:854-859 Je '63. (MIRA 16:7)

1. Ural'skiy politekhnicheskiy institut imeni Kirova.
(Steel—Heat treatment)
(Strains and stresses)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

BASKAKOV, A.P.; ZUBOV, V.Ya.; GRACHEV, S.V.; VERSHININA, V.B.

Patenting wire in a fluidized bed. Stal' 24 no.7:660-663 Jl '64.
(MIRA 18:1)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

L 10601-63 EWP(q)/EWT(m)/BDS AFFTC/ASD

ACCESSION NR: AP3001052 S/0148/63/000/004/0109/0114

AUTHOR: Zubov, V. Ya.; Krasil'nikov, L. A. 55 53

TITLE: Relaxation stability of 1Kh18N9T steel wire.

SOURCE: IVUZ. Chernaya metallurgiya, no. 4, 1963, 109-114

TOPIC TAGS: relaxation stability of steel wire, C, Mn, Si, S, P, Cr, Ni, Ti, 1Kh18N9T steel, U8A steel

ABSTRACT: This article is a continuation of a study which the authors conducted previously (Zubov, V. Ya., Krasil'nikov, L. A., Klekovkin, A. A., "Materials of conference of metallurgists and heating engineers", Metallurgizdat, 1960, page 88). Authors made additional studies on the problem of influence of cold-deformation and tempering on the relaxation-stability of 1Kh18N9T steel wire. Fatigue properties were also studied. Chemical composition of the wire was: C, Mn, Si, S, P, Cr, Ni, Ti. The wire's mechanical properties were determined by standard methods. Plastic limit was determined by strength measurements, taking into account the shear stress coefficient and using the equipment as described by [illegible] (Zavodskaya laboratoriya, [illegible], No. [illegible]). Authors include that plasticity of cold-drawn 1Kh18N9T steel wire tempered below [illegible]°C is somewhat lower

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

L 10601-63

ACCESSION NR: AP3001052

in comparison with wire drawn from USA steel. Elasticity is higher at elevated temperatures. Orig. art. has: 6 figures and 2 tables.

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

SUBMITTED: 08May62 DATE ACQD: 11Jun63 ENCL: 00

SUB CODE: 00 NO REF SOV: 008 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V. Ya.; GRACHEV, S. V.

Phenomena of anomalous stress relaxation in beryllium bronze. Fiz. met. i metalloved. 14 no.4:602-607 O '62. (MIRA 15:10)

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

(Beryllium bronze—Testing)
(Strains and stresses)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.Ya., doktor tekhn.nauk; GRACHEV, S.V., inzh.; SURKOV, Yu.P., inzh.

Effect of thermomechanical treatment on the strength of steel wire. Metalloved. i term. obr. met. no.1:20-22 Ja '62. (MIRA 15:1)

1. Ural'skiy politekhnicheskiy institut.
(Wire drawing)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

GRACHEV, S.V.; ZUBOV, V.Ya.

Effect of structural stability on the elastic aftereffect.
Izv. vys. ucheb. zav.; chern. met. no.2:68-72 '60. (MIRA 15:5)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Hardening)
(Phase rule and equilibrium)
(Strains and stresses)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V.Ya., doktor tekhn.nauk, prof.; GRACHEV, S.V., inzh.

Effect of preliminary plastic deformation on the properties of spring bands following heat treatment. Metalloved.i term.obr.met. no.2:46-47 F '62. (MIRA 15:3)

1. Ural'skiy politekhnicheskiy institut.
(Steel--Heat treatment)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, V. Z.; MULDAKHMETOV, Z. M.; and SUSHCHINSKI, M. M.

"Dependency of Intensity of Raman Lines of Second Order on Frequency of Exciting Light."

papers presented by USSR and Polish Scientists at the VIIth European Congress on Molecular Spectroscopy (IUPAC), held 22-27 July 1963 in Budapest, Hungary.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Ye.N.

On the paper "Some problems of the dynamic theory of elasticity for media containing cylindrical or spherical boundaries of separation." Uch.zap. LGU no.246:346-347 '58. (MIRA 12:2)
(Wave motion, Theory of)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Yu.

Reduce operational expenses on deposits. Fin.SSSR 20 no.4:57 Ap '59. (MIRA 12:6)

1. Inspektor TSentral'noy sberegatel'noy kassy Kirillovskogo rayona Vologodskoy oblasti.
(Kirillov District--Savings banks)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Yu.A.; MARKOVA, G.S.; KARGIN, V.A.

X-ray diffraction examination of polyethylene, polycaproamide, and polyethylene terephthalate fibers. Vysokom.soed. 5 no.8: 1171-1177 Ag '63. (MIRA 16:9)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Textile fibers, Synthetic) (X-ray diffraction examination)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ACCESSION NR: AP4040492 S/0190/64/006/006/1116/1119

AUTHORS: Malinskiy, Yu. M.; Guzeyev, V. V.; Zubov, Yu. A.; Kargin, V. A.

TITLE: Thermodynamics of the deformation of oriented fibers. 1. Temperature dependence of a caprone fiber

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 6, 1964, 1116-1119, and insert facing p. 1073

TOPIC TAGS: caprone fiber, reversible contraction, crystal pulling, shrinkage hysteresis, temperature dependence

ABSTRACT: The authors studied the temperature dependence (in the range 20 to 70C) of the length of polycaprolactam fiber samples, previously pulled to various degrees. The extent of reversible contraction on heating and lengthening on cooling depends upon the degree of the pulling and on the crystallinity. For fibers swollen in water the relation of temperature to change in fiber length is about four times that for air-dried specimens. The temperature dependence of the water content and desorption processes markedly affects this relationship. It is concluded that the phenomenon of reversible contraction during heating is due to the tendency of oriented macromolecules to increase the conformational assemblage,

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ACCESSION NR: AP4040492

which prevails over ordinary thermal linear expansion. Orig. art. has: 1 figure, 1 table, and 4 formulas.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute)

SUBMITTED: 23Jul63 ENCL: 00

SUB CODE: MT NO REF SOV: 005 OTHER: 004

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

L 27330-66 EWT(m)/EWP(j)/T IJP(c) RM

ACC NR: AP6008961 SOURCE CODE: UR/0190/65/007/011/1848/1856

AUTHORS: Zubov, Yu. A.; Tsvankin, D. Ya.

ORG: Institute of Elementoorganic Compounds, AN SSSR (Institut elementoorganicheskikh soyedinenii AN SSSR); Institute of Physical Chemistry im. L. Ya. Karpov (Fiziko-khimicheskiy institut)

TITLE: Temperature-induced changes of the long period in oriented polymers. 2.

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 11, 1965, 1848-1856

TOPIC TAGS: x ray diffraction pattern, synthetic fiber, thermal effect

ABSTRACT: Reversible and irreversible changes in the structure of stretched polyethylene, caprone, and polypropylene fibers (resulting from thermal treatment) have been studied by means of small angle x-ray diffraction patterns. This work is an expansion of the observations discussed earlier by Yu. A. Zubov, D. Ya. Tsvankin, G. S. Markova, and V. A. Kargin (Dokl. AN SSSR, 157, 948, 1964). The experimental methods have been described by G. Kh. Razikov, Yu. A. Zubov, G. S. Markova, and V. A. Kargin (Vysokomolek. soyed., 5, 760, 1963). Studies of repeated heating-cooling experiments have shown that irreversible changes are due to the increase in

Card 1/2 UDC: 678.01:53

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

L 27330-66

ACC NR: AP6008961

the size of crystallites and amorphous areas occurring during annealing, while the reversible changes can be explained by differences in molecular mobility and thermal expansion in crystallites and amorphous areas, as well as by reversible recrystallization. "The authors express their gratitude to A. I. Kitaygorodskiy for evaluating the results and for many valuable suggestions." Orig. art. has: 1 table and 5 figures.

SUB CODE: 07, 11/SUBM DATE: 26Nov64/ ORIG REF: 005/ OTH REF: 004

Card 2/2

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Yu.A.; TSVANKIN, D. Ya.; MARKOVA, G.S.; KARGIN, V.A., akademik

Temperature changes of the large period in oriented polymers.
Dokl. AN SSSR 157 no.4:948-950 Ag '64 (MIRA 17:8)

1. Fiziko-khimicheskiy institut im. L. Ya. Karpova.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

SOV/70-3-4-11/26

AUTHORS: Venevtsev, Yu.N., Zhdanov, G.S., Solov'yev, S.P. and Zubov, Yu.A.

TITLE: The Internal Fields in Certain Ferro-electrics with Structures of the Perovskite Type (Vnutrenniye polya v nekotorykh segnetoelektrikakh so strukturoy tipa perovskita)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 4, pp 473-479 (USSR)

ABSTRACT: An analysis of the methods of calculating the internal field in ferro-electrics of the perovskite type is made. The internal fields and the spontaneous polarisation in the tetragonal modifications of $BaTiO_3$ and $PbTiO_3$ are calculated and the influence of certain cation parameters on these quantities is estimated. The structure was assumed, as a first approximation, to be built up of point charges and point dipoles. Kozlovskiy's method (Zh.Tekh. Fiz., Vol 21, Nr 11, p 1388, 1951) where the five different ions are attached to five separate sub-lattices was used. In $BaTiO_3$ the Ba ion was taken as the origin but in the $PbTiO_3$ the Ti in view of the reported displacements (Shirane, Pepinsky and Danner, Acta Crystall, 1956, Vol 9, p 131). Published polarisabilities were used.

Cardl/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

The Internal Fields in Certain Ferro-electrics with Structures of the Perovskite Type

As the effective ionic charges were not known, a coefficient of charging $\gamma(0 \leqslant \gamma \leqslant 1)$, identical for all ions, was introduced. If for $BaTiO_3$ γ was taken as 1, then the calculated, spontaneous polarisation was twice the observed value. The value $\gamma = 1/2$ was therefore used for both $BaTiO_3$ and $PbTiO_3$. The spontaneous polarisation when calculated was then near to the observed value and the internal fields were found to be $BaTiO_3$: Ba, 0.04; Ti, 4.84; O_I, 3.66; O_{II} and O_{III}, 0.55. $PbTiO_3$: Pb, 1.83; Ti, 8.62; O_I = 7.02; O_{II} and O_{III}, 2.23: in each case X 10^8 V/cm. As the calculations were carried out with structure coefficients C_{ik} appropriate to a cubic structure, the approximation will be much better in the case of $BaTiO_3$ with c/a=1.01 than for $PbTiO_3$ with c/a = 1.06. The calculations were repeated with

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

The Internal Fields in Certain Ferro-electrics with Structures of the Perovskite Type

variations in certain of the parameters. For $BaTiO_3$ a was varied 4.2 and to 3.9 Å; α (polarisability) of the Ti was doubled and halved; the charge distribution was tried as $Ba^{+1/2}$, $Ti^{+2.5}$; the polarisability α_{Ba} of the Ba ions was doubled and halved. Similar variations were made for $PbTiO_3$. The relative influences of the various contributory effects were then apparent. The effects on the spontaneous polarisation were also found. The results are compared with those of other authors. There are 3 tables and 33 references, 13 of which are Soviet, 15 English and 5 German.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Institute of Physical Chemistry imeni L. Ya. Karpov)

SUBMITTED: July 18, 1957.

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Yu. P.

ZUBOV, Yu. P. -- "Optimum Dimensions of Clearings Taking into Account the Requirements of the Wood Industry and the Forest Economy." Min Higher Education USSR. Moscow Forestry Engineering Inst. Moscow, 1955. (Dissertation for the Degree of Candidate in Agricultural Sciences)

SO: Knizhnaya Letopis', No 1, 1956

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

RAZIKOV, K.Kh.; ZUBOV, Yu.A.; MARKOVA, G.S.; KARGIN, V.A.

Supermolecular formations in oriented polycaproamide. Vysokom. soed. 5 no.5:760-766 My '63. (MIRA 17:3)

1. Fiziko-khimicheskiy institut imeni Karpova.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

HALINSKIY, Yu.M.; GUZHYEV, V.V.; ZUBOV, Yu.A.; KARGIN, V.A.

Thermodynamics of the deformation of oriented fibers. Part 1.
Vysokom. soed. 6 no.6:1116-1119 Je '64 (MIRA 18:2)

1. Fiziko-khimicheskiy institut imeni Karpova.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

SELIKHOVA, V.I.; ZUBOV, Yu.A.; MARKOVA, G.S.; KARGIN, V.A.

Microscopic and X-ray diffraction study of polypropylene crystals. Vysokom. soed. 7 no.2:216-219 F '65. (MIRA 18:3)

1. Fiziko-khimicheskiy institut imeni Karpova, Moskva.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

5(4),21(8)

AUTHORS: Pronman, I. M., Shalashov, V. A., Breger, A. Kh., Zubov, Yu. A. SOV/20-127-6-32/51

TITLE: Decomposition of the Carbide Phase of White Cast Iron-Cementite Under the Action of Neutron Radiation

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 6, pp 1259-1262 (USSR)

ABSTRACT: The small number of papers written about phase conversions of metals and alloys under the action of neutron radiation is pointed out in the beginning (Refs 1-8). In order to study the above-mentioned process white cupola furnace-cast iron was used, from which cementite was extracted in form of a carbide sediment by electrolysis. The analysis of the initial material made under the management of N. M. Popova is given in table 1. Aluminum containers were placed for irradiation in the active zone of a nuclear reactor (concentrated uranium and ordinary water) with a total neutron flux of 10^{12} neutrons per cm^2.sec. The thermal neutrons were absorbed by an 1 mm thick Cd-filter. The amount of the flux of the 1 Mev fast neutrons was $1\text{-}5.10^{10}$ neutrons per cm^2.sec, and therefore the

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total dosage was $0.2\text{-}1.10^{16}$ neutrons per cm^2 for 50 hours of irradiation. The irradiated and the non-irradiated cementite samples were examined by X-ray analysis (Ionication apparatus type URS-50-I, Fe-K-radiation). The irradiated sample showed all lines of the cementite and the most intensive line of graphite (002) as well as lines of Fe_3O_4 (311) with low intensity. After annealing there were no changes observed for the non-irradiated sample while remarkable phase conversions were indicated by the X-ray analysis of the irradiated sample (Fig 2). Table 2 and figure 1 show the phase conversion of Fe_3C dependent on the annealing temperature. The irradiated cementite already deposits almost 2/3 of its iron at only 650°. This decomposition of Fe_3C is caused by centers of crystallization formed by irradiation. α-iron crystallizes at annealing temperatures below the austenite range, and γ-iron at temperatures of the austenite range. Carbon crystallizes in graphite only at temperatures above 1000°. The irradiation dosage applied was insufficient to form adequately active

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

Decomposition of the Carbide Phase of White Cast Iron-Cementite Under the Action of Neutron Radiation SOV/20-127-6-32/51

centers of graphite crystallization. The authors thank V. A. Kargin, Academician, and A. A. Zhukhovitskiy, Professor, for his judgment of the paper under review. There are 2 figures, 2 tables, and 14 references, 8 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut po normalizatsii v mashinostroyenii (All-Union Scientific Research Institute of Standardization of Mechanical Engineering)
Fiziko-khimicheskiy nauchno-issledovatel'skiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

PRESENTED: April 10, 1959, by V. A. Kargin, Academician

SUBMITTED: April 9, 1959

Card 3/3

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Yu.A.; TSVANKIN, D.Ya.; MARKOVA, G.S.; KARGIN, V.A.

Large periods in polypropylene fibers. Part 1: Effect of orientation and heat treatment (annealing) on the size of the large periods. Vysokom. soed. 6 no.3:406-411 Mr'64. (MIRA 17:5)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni Karpova.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5"

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

AUTHOR: Razikov, K. Kh.; Zubov, Yu. A.; Markova, G. S.; Kardash, V. A.

TITLE: Supramolecular formations in oriented polycapramide. 2. Effect of thermal treatment on the crystalline structure of polycapramide monofibers

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 5, no. 5, 1963, 760-766

TOPIC TAGS: supramolecular formations, oriented polycapramides, monofibers, the large period, orientation

ABSTRACT: Monofibers of unstretched and five-fold stretched polycapramide were annealed at 205C for 1.5, 3, and 6 hours, and ultrathin longitudinal slices of these were studied by electron microscope and x-rays. The formation of large supramolecular bodies of spherolytic, microfibrillar, and laminated structure was observed on the monofibers, the stretched fibers yielding structurally more perfect formations. The dimensions of the microfilament unit, constituting the basic unit of the structurally oriented monofibers, were estimated as 100 Angstrom in width and a few microns in length. Low-angle x-ray investigations disclosed the presence in both the stretched and the unstretched unheated polycapramide monofibers of large period units (d = 83 Angstrom), which in the stretched fibers were oriented along their axis. Annealing causes the large period units to increase to d = 96 Angstrom,

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L 13557-63
ACCESSION NR: AP3000704

suggesting a pleated chain structure in the unheated monofibers. Orig. art. has: 9 figures.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L. Ya. Karpova (Physicochemical Institute)

SUBMITTED: 23Nov61 DATE ACQ: 17Jun63 ENCL: 00

SUB CODE: CH NO REF SOV: 007 OTHER: 004

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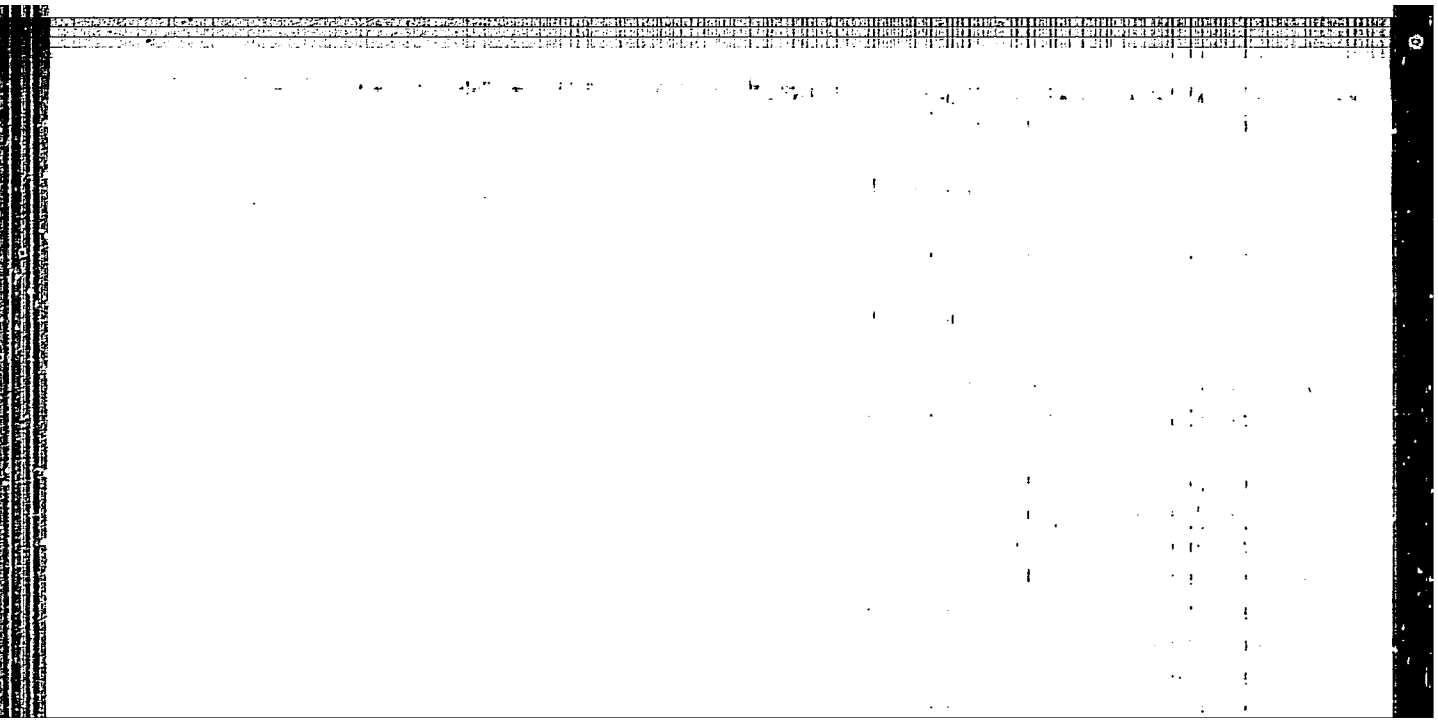

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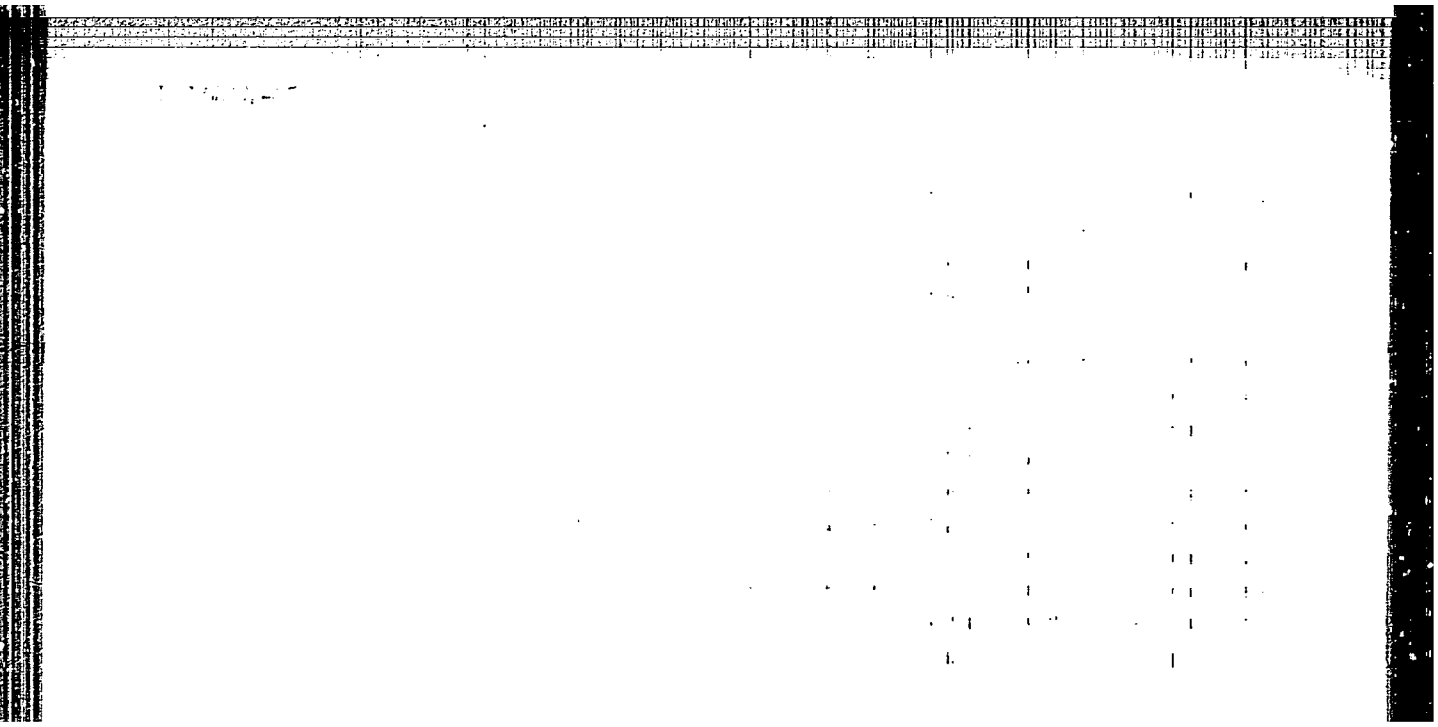

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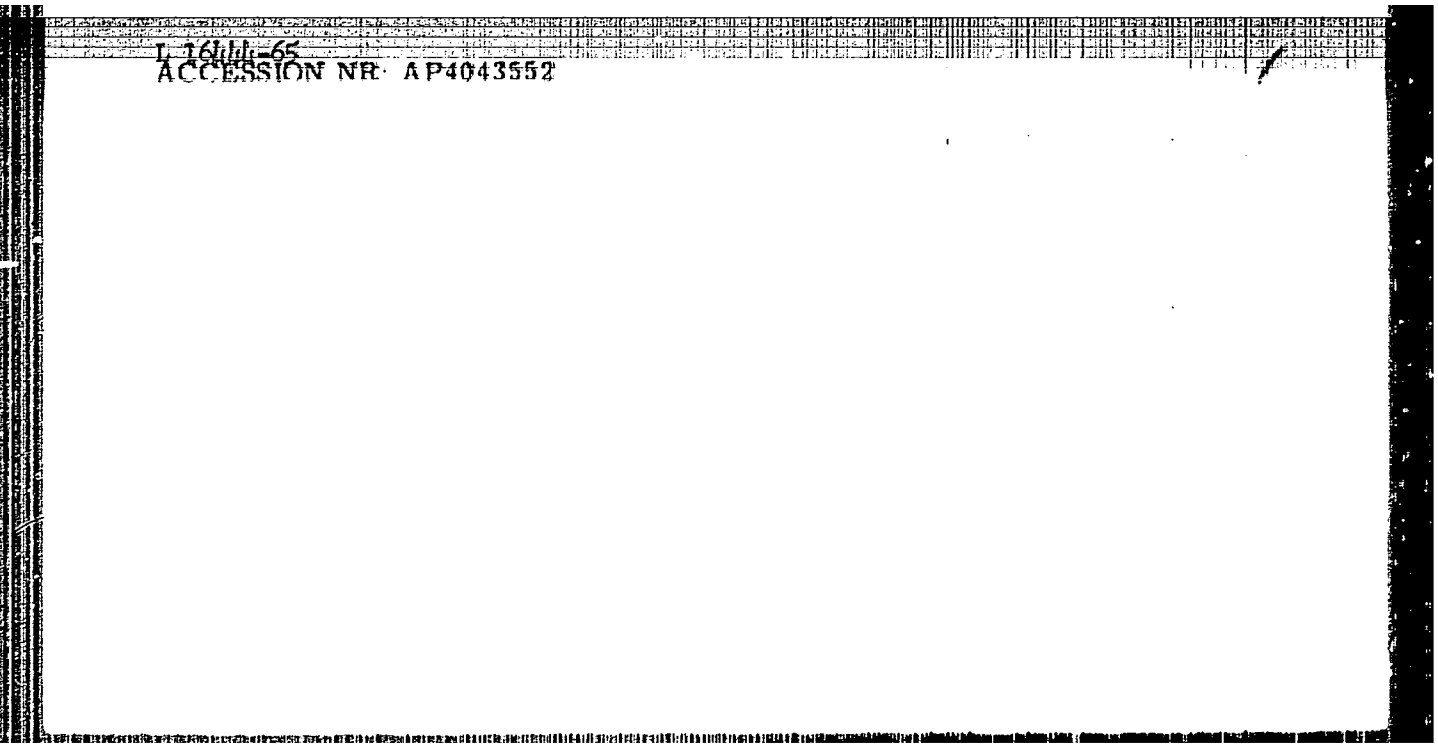

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A L 11609-66 EWT(m)/EWP(1)/T RM SOURCE CODE: UR/0190/65/007/012/2126/2131

ACC NR: AP6001866

AUTHORS: Andrichenko, Yu. D.; Druzhinina, T. V.; Zubov, Yu. A.; Konkin, A. A.; Tsvankin, D. Ya.

ORG: Moscow Textile Institute (Moskovskiy tekstil'nyy institut); Institute for Heteroorganic Compounds, AN SSSR (Institut elementoorganicheskikh soyedineniy, AN SSSR)

TITLE: Study of the structure and properties of polyethylene fibers

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 12, 1965, 2126-2131

TOPIC TAGS: polymer, crystalline polymer, ~~linear polymer~~, polyethylene, elastic modulus, elasticity, molecular structure, solid mechanical property, synthetic fiber, x ray scattering

ABSTRACT: The influence of supermolecular structure on the mechanical properties of polyethylene fibers was studied. A particular emphasis was placed on the effect of stretching on the structural transformation of linear polyethylene fibers. The experiments were carried out at 110C. The structural changes were investigated by means of x-ray spectroscopy, birefringence, and density determinations. The interpretation of large angle x-ray scattering data was carried out by the method of D. Ya. Tsvankin (Vysokomolek. soyed., 6, 2078, 2083, 1964). Mechanical properties of the fibers determined as a function of the degree of stretching are presented in

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tables and graphs. It was found that complete orientation of crystallites was realized at 800% stretching. The so-called large period first decreases from 200 Å to 173 Å, and then increases to 212 Å with increase in the degree of stretching. At higher degrees of stretching, the intensity of the large period decreases sharply. It is suggested that the marked increase in the elasticity modulus which increases in the large period is associated with the orientation of crystallites and with the increased degree of crystallinity of the polymer fibers. Orig. art. has: 2 tables and 4 graphs.

SUB CODE: 11/ SUBM DATE: 26Jan65/ ORIG REF: 003/ OTH REF: 001

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ZUBOV, Yu.A.; TSVANKIN, D.Ya.

Temperature-induced changes of the long period in oriented polymers. Part 2. Vysokom. soed. 7 no.11:1848-1856 N '65. (MIRA 19:1)

1. Institut elementoorganicheskikh soyedineniy AN SSSR i Fizikokhimicheskiy institut imeni L.Ya. Karpova, Moskva.
Submitted November 26, 1964.

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"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002065610006-5

ACC NR: AP6034218 (A,N) SOURCE CODE: UR/0120/66/000/005/0037/0039

AUTHOR: Vorotnikov, P. Ye.; Zubov, Yu. G.; Molchanov, Yu. D.; Udod, A. A.; Yan'kov, G. B.

ORG: Institute of Atomic Energy, GKAE, Moscow (Institut atomnoy energii GKAE)

TITLE: A nanosecond-pulse ion source

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1966, 37-39

TOPIC TAGS: ion source, particle acceleration, ion accelerator, NANOSECOND PULSE, ELECTROSTATIC GENERATOR

ABSTRACT: Test results of a pulse ion source for an electrostatic accelerator are presented. The testing apparatus was constructed on the basis of P. Ye. Vorotnikov calculations (see Fig. 1). Using a relatively low-power high-frequency source ($I \sim 60$ μa) and applying phase ion focusing, a very economical source of ion current pulses of approximately 2 nsec duration, a pulse current of ~1.5 ma, and a repetition rate of approximately 4 Mc can be obtained. The ion energy spread was found to constitute 400 ev, and the ion current utilization factor was about 25%. The authors thank V. G. Brovchenko who helped in developing the measuring procedure. Orig. art. has: 5 figures and 2 formulas.

Card 1/2 UDC: 621.384.62

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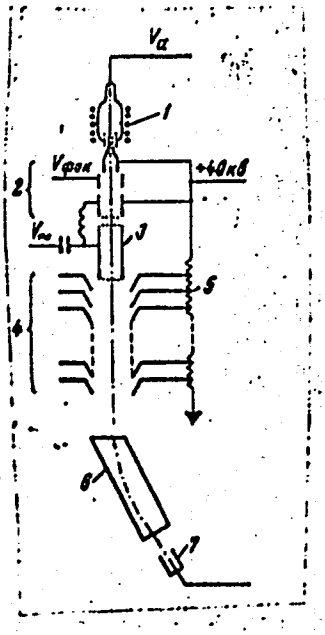

Fig. 1. Schematic diagram of the pulse ion source

1 - High-frequency ion source; 2 - focussing system; 3 - bunching electrode; 4 - accelerating tube consisting of 16 conical electrodes; 5 - voltage divider; 6 - magnetic separator; 7 - ion collector.

SUB CODE: 20/ SUBM DATE: 14Oct65/ ORIG REF: 002/ OTH REF: 001/

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A061/A101

AUTHORS: Zubov, Yu.G.; Lebedeva, N.S.; Morozov, V.M.

TITLE: Inelastic scattering of 3.2-4.5-Mev neutrons from beryllium

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 44 - 45, abstract 6B318. (In collection: "Neytron. fizika". M., Gosatomizdat, 1961, 298 - 305)

TEXT: The cross section of the Be^9 (n, 2n) Be^8 reaction was measured. A Be target, placed on the axis of a circular channel in the center of an organic glass moderator block, was irradiated by a collimated neutron beam from the d-d reaction. Preliminarily moderated secondary neutrons were recorded by BF_3 counters arranged on the surface of three concentric cylinders which were coaxial with the channel. It was possible to connect groups of counters in coincidence. The cross section of the (n, 2n) reaction was determined by comparing the full number of counts in Be-target operation with the number of counts in carbon-target operation (the latter target was used to estimate the elastic scattering of neutrons), and also by recording the coincidences of neutron counts in groups of counters. The cross section of the Be^9 (n, 2n) Be^8 reaction for neutron energies of 3.2; 3.7; 4.1 and 4.5 Mev was 0.8 ± 0.1; 0.73 ± 0.0; 0.53 ± 0.07 and 0.45 ± 0.05 barn,

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