Elimination of Chlorine From Zinc Sulfate Solutions by Basic Bismuth Sulfate

75387
SOV/149-2-5-13/32

theoretically required; i.e., 9 part is bismuth to 1 part chlorine. After the reaction, the electrolyte will contain about 250 to 350 mg/liter dissolved bismuth. The latter can be eliminated by neutralizing the solution with zinc oxide to a pH level of 4.5 to 5 and by a subsequent filtration. A presence of 10 mg/liter of bismuth in the electrolyte can be tolerated although it contaminates the cathode zinc with bismuth. The regeneration of the basic sulfate from bismuth chloride is done with sulfuric acid under heating. The regeneration is complete. There are 4 tables.

ASSOCIATION: North Caucasian Mining Metallurgical Institute. Chair of General Metallurgy (Severokavkazskiy gornometallurgicheskiy institut. Kafedra obshchey metallurgii)

SUBMITTED: March 11, 1959

Card 2/2

S/724/61/000/000/004/020

AUTHORS: Loktionova, N. A., Rastvorova, N. M., Bereslavtseva, O. P., Larikova, M. I., Stroganov, G. B.

TITLE: A New heat-treatment procedure for the AL19 alloy to maintain dimensional stability of castings.

SOURCE: Liteynyye alyuminiyevyye splavy; svoystva, tekhnologiya plavki, lit'ya i termicheskoy obrabotki. Sbornik statey. Ed. by I. N. Fridlyander and M. B. Al'tman. Moscow, Oborongiz, 1961, 36-42.

TEXT: The paper describes the laboratory development and industrial testing of a new heat-treatment procedure for AL19 parts of complex configuration. The procedure maintains a good stability of the geometric dimensions of the part throughout the course of the heat treatment. The laboratory investigation consisted essentially of the quenching of AL19 castings in water at differing temperatures (T). The cast specimens had a variable-section annular shape. They were quenched in a horizontal attitude. Artificial (accelerated) aging was performed. The specimens were placed into a furnace at 300°C, whereupon the T was raised to 535 ± 5°. After 9-hour soaking, the T was raised to 545 ± 5°, with additional 7-hr holding. After quenching in water at varying T up to 96°, some of the specimens were aged at 175° for 3 hrs. It was found that: (1) For cross-sectional thicknesses up to 75x60 mm,

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the AL19 alloy is practically insensitive to a reduction in the rate of cooling upon quench. The mechanical properties of the castings in the freshly quenched state, tested at room T, were practically invariable with an increase in water T from 45 to 96°, whereas in aged specimens tensile strength and relative elongation were somewhat reduced thereby. The mechanical properties at 250°C (short-term tests) were practically invariable with an increase in quench-water T up to 96° and were also independent of the type of heat treatment; (2) the total corrosional stability of the AL19 alloy quenched in water is practically the same with quench-water T of 45 and 96°, both in the freshly quenched state and after artificially accelerated aging; (3) the quenching of odd-shaped large castings in boiling water produces so insignificant a warping of the castings, that virtually no straightening is required after heat treatment. The adoption of quenching in boiling water for large odd-shaped castings has provided a cardinal solution of the problem of warpage, has reduced the amount of labor required, and has increased the quality of parts made of AL19 alloy; (4) quenching in boiling water does not require any additional major equipment and does not alter in any way the procedural schedule of the production line. Quenching in boiling water can be done with the utilization of ordinary vats and requires only a simple addition of equipment in which the water is heated by means of live steam. There are 2 figures, 4 tables, and 1 Russian-language Soviet reference.

S/135/61/000/002/008/012
A006/A001

AUTHOR: Beresnev, A. S., Engineer

TITLE: Cause of the Appearance of Bulgings and Cracks in Containers Made of AMr6 (AMg6) Alloy by Seam Welding

PERIODICAL: Svarochnoye proizvodstvo, 1961, No. 2, pp. 33-34

TEXT: Bulgings and cracks were revealed in AMg6 alloy containers manufactured by seam welding. The defects appeared between the seams within 2 - 6 months and caused failure of the containers. The bulgings were 3 - 5 mm high and 50 - 100 mm long. Hydrogen gas escaped from the bulgings when holes were drilled. It is shown in Reference 1, 2 that hydrogen may form as a result of a chemical reaction between the so-called β-phase (Al_8Mg_5) and the water, cooling the rolls. During seam welding of the AMg6 alloy the time consumed to heat the alloy until fusion is not sufficient to ensure the transition of the β-phase into a solid solution, which therefore passes into a liquid state, where it is unstable and decomposes with separation of magnesium. Magnesium reacts with the moisture contained on the surface of the parts and with moisture penetrating into the depth of the alloy along the grain boundaries. Magnesium oxidizes and liberates hydrogen which is

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S/135/61/000/002/008/012
A006/A001

Causes of the Appearance of Bulgings and Cracks in Containers Made of AMr6 (AMg6) Alloy by Seam Welding

accumulated in the region of the seams and exerts a local tensile effect entailing the failure of the container. To confirm the aforementioned concepts the following experiment was carried out. Two "Amg6" and 1AMц (AMts) (Al-Mn) specimens were welded by hermetic seams. Specimen No. 1 was welded with water cooled rolls, the moisture penetrating into the spaces between the seams. Specimen No. 2 was welded in such a manner that moisture between the seams was eliminated; specimen No. 3, was welded with water. The specimens were than placed in a furnace heated to 400°C and held at this temperature for 10 minutes. Bulgings were revealed on specimen No. 1 but not on the other two specimens. This shows that a chemical reaction with hydrogen liberation had taken place in the first case; this reaction did not occur in the two other specimens due to the absence of moisture in the 2nd specimen and magnesium in the third one. The following recommendations are given: When manufacturing AMg6 alloy containers the bottom cannot be welded with two hermetic seams with an inter-space of 15 mm. The bottom should be welded-on by one single seam. Thus the possibility of β-phase separating out is reduced, the grain growth in the weld-adjacent zone is diminished and efficiency is raised.

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Causes of the Appearance of Bulgings and Cracks in Containers Made of АМг6 (AMg6) Alloy by Seam Welding

In a two-row seam the distance must be 1 - 3 mm. Shunting of current is not to be expected, since during welding of the second seam on a МШИ-400-2 (MShI-400-2) machine it is sufficient to increase the pulse of the welding current by one graduation of the "pulse" potentiometer to obtain the same width of cast zone for both the first and second seams. If a distance between the seams should be over 1 - 3 mm, then the second seam must be non-hermetic. The aforementioned conditions pertain to any sheet structures made of aluminum-magnesium alloys, having closed regions formed by welding.

Figure 1:

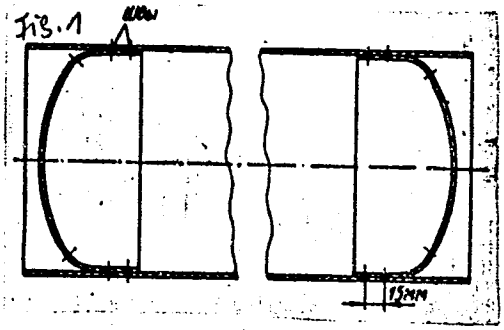

Figure 1
Schematic drawing of the container

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S/135/60/000/002/008/012
A006/A001

Causes of the Appearance of Bulgings and Cracks in Containers Made of АМг6 (AMg6) Alloy by Seam Welding

Figure 3:

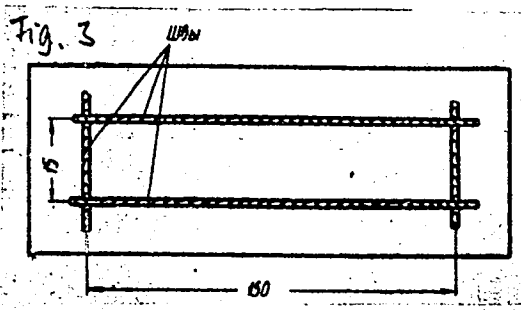

Figure 3
Schematic drawing of a specimen
There are 4 figures and 2 Soviet references.

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1.2300 2408, 1573

32775
S/135/62/000/001/005/007
A004/A101

AUTHOR: Beresnev, A.S., Engineer

TITLE: Some technological features of the welding of structures from AMr - 6 (AMg6) alloy

PERIODICAL: Svarochnoye proizvodstvo, no. 1, 1962, 24 - 26

TEXT: The author investigates the special features of the argon arc and spot welding of large-size sheet structures from AMg6 aluminum alloy and describes the equipment used for this purpose. The structures consist of an inner and outer jacket of 2 and 1.2 mm sheet metal respectively, reinforced by a framework of 2 mm sheet metal. The whole structure is broken down into technological sections of 2,300 - 2,400 mm length. The frames are welded to the inner sheet metal jacket on the МТПТ -600 (MTPT-600) welder. Then the sections are joined to each other by automatic argon arc welding. The inner jacket is argon-arc welded on automatics with tungsten electrodes without filler wire. Burns are prevented by limiting the clearances between the joints: to 0.15 mm for the 2 mm sheets, and to 0.1 mm for the 1.2 mm sheets. The author gives a detailed description of welding the sections, joining the sections and welding the outer

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Some technological features ...

Jacket. It is pointed out that also the МШШТ-600 (MShShT-600) and МШШИ-400 (MShShI-400) welders can be used for welding the frames and the inner sheet metal jacket. The automatic welding of the circumferential seams is carried out with tungsten electrodes and filler wire on a special installation developed by Engineer Ye.Ya. Belin and others at the plant [Abstracter's note: the plant is not named]. There are two reasons for using the filler wire: the difficulty of assembling the sections with a clearance not exceeding 0.15 mm and the necessity of rolling the seams without filler wire, since they are weakened by the sagging of the reverse of the seam. If welding is carried out when power-supplied from the first stages of the transformer, it is expedient, for increasing the welder capacity, to use electrode holders for twin electrodes. For welding the circumferential seams of the inner jacket and the longitudinal and circumferential seams of the outer jacket, a rigid clamping of the blanks is necessary. There are 5 figures and 1 table.

Card 2/2

KALACHEV, Yu.A.; BERESNEV, A.T.; LUNEGOV, D.P.

Performance of a kerosene cutter using liquefied gas. Gaz.prom. 6 no.7: 23-24 '61. (MIRA 17:2)

KALACHEV, Yu.A., inzh.; BERESNEV, A.T., inzh.; LUNEGOV, D.P.

Propane-oxygen cutting by the K-51 petroleum torch. Svar. proizv. no.7:37-38 Jl '61. (MIRA 14:6)

1. Chelyabinskiy nauchno-issledovatel'skiy institut tekhnologii mashinostroyeniya (for Kalachev, Beresnev). 2. Chelyabinskiy traktornyy zavod (for Lunegov).
(Gas welding and cutting--Equipment and supplies)

KALACHEV, Yu.A., inzh.; BERESNEV, A.T., inzh.; SERGEYEV, I.I., inzh.

Propane-butane cutting at the Chelyabinsk Pipe Rolling Mill. Svar. proizv. no.3:36-37 Mr '62. (MIRA 15:2)

1. Chelyabinskiy NIPTIAMMASh (for Kalachev, Beresnev). 2. Chelyabinskiy truboprokatnyy zavod (for Sergeyev).
(Gas welding and cutting) (Chelyabinsk--Pipe mills)

LIVSHITS, L.N., inzh.; PETROV, V.P., inzh.; VALGE, I.A., inzh.; BERESNEV, A.T., inzh.

Manufacture of welded beams of the V92-T aluminum alloy. Prom. stroi. 40 no.12:23-28 '62. (MIRA 15:12)

1. Chelyabinskiy zavod metallokonstruktsiy imeni Ordzhonikidze (for Livshits).
(Aluminum alloys) (Beams and girders)

COUNTRY : USSR
CATEGORY : Cultivated Plants. Fruits. Berries. Nuts. Tea. M
APS. JOUR. : RZhBiol., No. 1, 1959, No. 1800
AUTHOR : Boresnov, A.Ye.
INST. :
TITLE : On Apple Planting in Siberia.

ORIG. PUB. : Sad i ogorod, 1958, No.4, 75-76

ABSTRACT : No abstract.

CARD: 1/1

AUTHORS: Beresnev, B.I., Vereshchagin, L.F., Ryabinin, Yu. N. (Moscow). 24-5-5/25

TITLE: Certain features of the rheological behaviour of metals pressed through a die by means of a liquid under high pressure (without a plunger). (Ob osobennostyakh reologicheskogo novedeniya metallov, pressuyemykh zhidkost'yu).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.5, pp.48-55 (U.S.S.R.)

ABSTRACT: Pressing of metals in the cold state can be effected either by means of a plunger pressing against the work or by means of fluid under high pressure. The first method is at present very widely used but owing to the very high friction forces between the material and the die walls it cannot be applied to metals with high yield points. This obstacle can to a certain extent be eliminated by using the second method, namely, pressing by means of the hydrostatic pressure of a liquid. The here described experiments were carried out by the Laboratory of Super-high Pressure Physics of the Ac.Sc. (Laboratoriya Fiziki Sverkhvysokikh Davleniy AN SSSR) and represent one of the first attempts to obtain

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Certain features of the rheological behaviour of metals pressed through a die by means of a liquid under high pressure(without a plunger). (Cont.) 24-5-5/25

information on pressing metals by means of liquids under high pressure and to elucidate the influence of such a method of shaping on the mechanical characteristics of the metal and the features of the flow of the metal through the die. This paper deals with the part of the study relating to the rheological behaviour of the materials pressed by means of a liquid. For materialising the process apparatus was built which permits pressing by means of pressures up to 12 000 atm. The upper limit of the pressure is given by the pressure which can be produced by the compressor built in the Laboratory. A photo of the apparatus is shown in Fig.2, p.49, whilst Fig.3 shows the attachment for pressing the material through the die and Fig.4 shows the die geometry. The die was produced from ШХ-15 Steel heat treated to a hardness of 62 Rockwell C. Fig.5 gives curves of the specific pressing pressure, p kg/cm^2 against a deformation for aluminium and for copper using dies with differing entering angles. Fig.6 shows the dependence of the specific pressing pressure on the entering

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Certain features of the rheological behaviour of metals pressed through a die by means of a liquid under high pressure (without a plunger). (Cont.) 24-5-5/25

angle for aluminium and copper, whilst Fig.7 shows the dependence of the pressing pressure on P on the magnitude of the entering angle of the die. Graphs, Figs. 8—10 give theoretically calculated values, which are compared with experimental results. Compared to the process of pressing metals through dies by means of a plunger, pressing of dies by applying hydraulic pressure has the following advantages: the total pressing pressure is considerably reduced since there are no losses caused by friction in the cylindrical part of the die; the resulting reduction in the total required pressing force also leads to a reduction of the friction coefficient between the metal and the die; the reduction in the friction coefficient between the metal and the die leads to a considerable reduction of the optimum entering angle as compared to the optimum entering angle in the case of pressing by means of a plunger. There are 10 figures and 9 references, all of which are Slavic.

Card 3/3

SUBMITTED: March 1, 1957.

ASSOCIATION: Laboratory of Super-high Pressure Physics of the Ac.Sc. (Laboratoriya Fiziki Sverkhvysokikh Davleniy AN SSSR)

AVAILABLE:

BERESNEV, B.I.

SOV/136-58-8-14/27

AUTHORS: Beresnev, B.I., Vereshchagin, L.F. and Ryabinin, Yu.N.

TITLE: Installation for Drawing and Rolling Metals in Freely Rotating Rolls in a Liquid under High Hydrostatic Pressure (Ustanovka dlya volocheniya i prokatki v svobodno vrashchayushchikhsya valkakh metallov v zhidkosti pod vysokim gidrostaticheskim davleniyem).

PERIODICAL: Tsvetnyye Metally, 1958, Nr.8, pp.61-63 (USSR)

ABSTRACT: Bridgeman (Ref.1) on the basis of investigations of the effect of pressure on metal properties proposed and carried out preliminary experiments on the rolling and drawing of metals under hydrostatic pressure. Bridgeman (Ref.1) and also the authors, working in the Laboratoriya fiziki sverkhvysokikh davleniy AN SSSR (Laboratory of Super-High Pressure Physics of the AS USSR) (Ref.4), extended the technique and noted the improvement of metal properties. Special installations (Fig.1) have been used to compare the two methods of deformation and served as the basis for an installation produced by the authors for drawing or rolling (idler rolls) metals in hydrostatic pressures up to 10,000 kg/cm^2 (Fig.2). The liquid is supplied by a laboratory

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Installation for Drawing and Rolling Metals in Freely Rotating Rolls in a Liquid under High Hydrostatic Pressure.

compressor rated at 3.8 litres/hour at 10,000 kg/cm^2. The conversion from drawing to rolling is simply effected. The more important parts are made of heat-treated alloy steels. The installation has been used for experiments on the pressure drawing and rolling to various degrees of deformation, but the authors do not give their results. There are 2 figures and 6 Soviet references.

1. Metals--Processing Metallurgical effects 2. Rolling mills--Design 3. Pressure-- 4. Water--Applications

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SOV/24-58-10-28/34

AUTHORS: Beresnev, B. I., Vereshchagin, L. F., Ryabinin, Yu. N. (Moscow)

TITLE: Role of the Medium in the Extrusion of Metals by Means of a Liquid under High Pressure (Rol' sredy pri vydavlivanii metallov zhidkost'yu vysokogo davleniya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 10, pp 144-146 (USSR)

ABSTRACT: Bridgman carried out experiments on extruding copper and steel with a liquid under pressures of up to 12 000 atm. He stated that he did not succeed in finding an optimum regime for this process and, as a result of that, at very high pressures the metal came out of the die in individual bits instead of continuously. Similar work carried out in the Very High Pressure Physics Laboratory of the Academy of Sciences, USSR, has shown that the correct selection of the medium which transmits the pressure determines to a considerable extent not only the magnitude of the pressure necessary for effecting flow of the metal but also the quality of the metal after deformation. Information gained during these experiments is reported in this paper. The authors studied

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Role of the Medium in the Extrusion of Metals by Means of a Liquid under High Pressure

the influence of various media, which act both as a medium for transmitting the pressure and as a lubricant, on the pressure necessary for producing equal deformations. For this purpose aluminium was extruded through a die with a cone angle $\alpha = 40^{c}$. The reduction was maintained constant at 0.773. The method was the same as that described in earlier work (Ref.2). The following results were obtained:

Liquid transmitting pressure	Pressure at which the flow of metal begins P. kg/cm^2	Surface quality
Hypoid lubricant	3750	Bad
Transformer oil	5500	Satis-
Transformer oil + kerosene (0.5+0.5)	6500	factory
Transformer oil + kerosene + oleic acid (0.49+0.49+0.02)	6450	"
Kerosene	6900	"
Gasoline	6900	"
Methylated spirits	6075	"
Ethyl alcohol	6450	"

Role of the Medium in the Extrusion of Metals by Means of a Liquid under High Pressure

Table (continued)

Liquid transmitting pressure	Pressure at which the flow of metal begins P, kg/cm²	Surface quality
Water	5500	Good
Water + a layer of hypoid lubricant applied to the surface of the specimen	5000	Excellent

On the basis of the obtained results, the following conclusions are arrived at:

1) The pressure necessary to produce a flow of the metal as well as the surface quality of the deformed metal are greatly dependent on the fluid used.

2) It was found that plating of the specimen with a thin layer

Role of the Medium in the Extrusion of Metals by Means of a Liquid under High Pressure

of a tin-lead solder reduces considerably the pressure necessary for extrusion.
3) Optimum conditions of extrusion were determined, by means of which a high surface quality can be obtained, namely, by applying a thin layer of hypoid lubricant on a specimen which is extruded by means of water.
4) It was found that if the wrong liquid is applied this can lead not only to damage of the surface of the extruded metal but also to its complete destruction. There are 1 table, 1 figure and 6 Soviet references.

ASSOCIATION: Laboratoriya fiziki sverkhvysokikh davleniy AN SSSR, Institut fiziki metallov, AN SSSR (Laboratory of Physics of Very High Pressures, Academy of Sciences USSR, Institute of Metal Physics, Academy of Sciences USSR).

SUBMITTED: May 27, 1958.

BERESNEV, B.I.; VERESHCHAGIN, L.F.; RYABININ, Yu.N.

Extrusion of pipes and parts of complex profile by liquid under high pressure. Inzh.-fiz.zhur. no.11:105-109 N '58.
(MIRA 12:1)

1. Laboratoriya fiziki sverkhvysokikh davleniy AN SSSR, g. Moskva, i Institut fiziki metallov AN SSSR, g. Sverdlovsk.
(Extrusion (Metals))

BERESNEV, B.I., Cand Tech Sci -- (diss) "Conditions of flow and change in the mechanical properties of metals in their extrusion with a high-pressure liquid." Mos, 1959, 12 pp (Acad Sci USSR. Inst of Physics of High Pressures) 150 copies. Bibliography: pp 11-12 (11 titles) (KL, 33-59, 118)

SOV/179-59-1-19/36

AUTHORS: Beresnev, B. I., Vereshchagin, L. F., Ryabinin, Yu. N.(Moscow)

TITLE: The Extrusion of Metals by a Liquid Under High Pressure (O vydavlivanii metallov zhidkost'yu, nakhodyashcheysya pod vysokim davleniyem)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 1, pp 128-131 (USSR)

ABSTRACT: The paper is a continuation of earlier work (Ref.2). Extrusion of a metal by a liquid under high pressure is an improvement over extrusion by a plunger, since much of the friction at the walls of the container is eliminated. Experiments were carried out on aluminium AD-I, copper M-2, duralumin D-1M and alloy AMG. The degree of deformation was measured as

$$\phi = (D^2 - d_o^2) \, 1 \, D^2 \quad ,$$

or as

$$S_f = \ln(D^2/d_o^2) \quad ,$$

where D is the initial diameter of the metal cylinder, and d_o is the diameter of the extruded metal. Curves are given

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The Extrusion of Metals by a Liquid under High Pressure

for ϕ and S_f as functions of pressure and the effect of the angle of the cone which reduces the diameter from D to d_0 is also investigated. Microhardness measurements on copper extruded by the plunger method and by the liquid pressure method show that the copper produced by the latter method is the more uniform. There are 4 figures, 1 table and 8 Soviet references.

SUBMITTED: April 14, 1958.

Card 2/2

SOV/126-7-1-18/28

AUTHORS: Beresnev, B.I., Vereshchagin, L.F. and Ryabinin, Yu.N.

TITLE: The Influence of Hydrostatic Pressure on the Change in Mechanical Properties of Aluminium After Strong Plastic Deformation (O vliyanii gidrostaticheskogo davleniya na izmeneniye mekhanicheskikh svoystv alyuminiya posle bol'shikh plasticheskikh deformatsiy)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 1, pp 128-132 (USSR)

ABSTRACT: During plastic deformation a change of the fine structure of metals occurs and new micro-defects of the crystal lattice, as well as those already present, develop. Such development of micro-defects in a definite stage of deformation leads to the formation and propagation of macro-fractures. Under conditions of hydrostatic pressure the formation and development of micro-defects during plastic deformation is not only rendered more difficult, but an intensive self-healing process of the existing defects in the crystal lattice takes place (Ref.1), and these effects have an important bearing on the plastic flow. It has been shown that the plasticity of

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materials increases sharply if they are deformed at high hydrostatic pressures. The authors have carried out a study of the extrusion of a number of non-ferrous metals and alloys by liquid under high pressure. The method of such an extrusion process, the rheological effect accompanying the flow of metal through the die and the nature of the change in mechanical properties of the metal extruded by liquid has been described by Beresnev (Refs.9,10). However, it was also necessary to find a means of deforming metal parts to the same extent using various pressures. Extrusion of step-shaped specimens made it possible to solve this problem. The essence of this method is shown in Fig.1. The three specimens have different diameters. The diameter determines the pressure at which metal flows through the dye. Thus it is possible to obtain data of the influence of three different pressures on work-hardening by bringing about three different degrees of deformation. The mechanical properties of aluminium (ADI) as annealed are shown in Table on p 130.

 From the curves of Fig.2 it is possible to calculate the

usual properties, UTS, yield stress, relative elongation, final reduction in area and the coefficient of uniform reduction in area. In Figs.3, 4 and 5 the relationships between three characteristics of plasticity (final reduction in area, relative elongation and coefficient of uniform reduction in area) and extrusion pressure are shown. It was found that all these characteristics which determine the plasticity of aluminium increase with increase of pressure. As regards the influence of pressure on the strength of the metal, a few conclusions can be arrived at from a consideration of Fig.5. It is known that the physical strengthening of a metal is greatest on attaining a deformation which is equal to the coefficient of uniform reduction in area (see Ref.11). As can be seen from Fig.5, pressure causes this coefficient to increase. Hence an increase in strength of aluminium with increase in extrusion pressure at the same preliminary deformation can be expected.

The Influence of Hydrostatic Pressure on the Change in Mechanical Properties of Aluminium After Strong Plastic Deformation

There are 5 figures, 1 table and 11 references, of which 9 are Soviet and 2 German.

ASSOCIATION: Laboratoriya fiziki sverkhvysokikh davleniy AN SSSR (Laboratory of the Physics of Extremely High Pressures, Ac. Sc. USSR)

SUBMITTED: February 14, 1958

25(1), 18(6), 18(7) SOV/126-7-2-13/39

AUTHORS: Beresnev, B. I., Vereshchagin, L. F. and Ryabinin, Yu.N.

TITLE: Change in the Mechanical Properties of Non-Ferrous Metals and Alloys in the Process of Extrusion by a High Pressure Liquid (Izmeneniye mekhanicheskikh svoystv tsvetnykh metallov i splavov pri vydavlivanii ikh zhidkost'yu vysokogo davleniya)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 2, pp 247-253 (USSR)

ABSTRACT: Metal was used for the investigation which had undergone various degrees of deformation by liquid-extrusion as well as by plunger extrusion. The method used for the extrusion of metals by liquid has been described by Beresnev et al. (Ref 5). In order to compare results, an instrument for extruding metals by a plunger was made. Specimens in the form of rods of definite length were made for tensile testing from the metal thus treated. Prior to testing the specimens were gripped in tong-like grips. The distance between the grips was kept at 10 d_o (d_o being the diameter of the specimen prior to testing and being 2-4 mm). Testing was carried out in a specially designed tensile testing machine at 4 mm/min. The force

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Change in the Mechanical Properties of Non-Ferrous Metals and Alloys in the Process of Extrusion by a High Pressure Liquid

applied to the specimen was registered at various stages of testing with an accuracy of up to 0.7 kg. The elongation of the specimen was registered by pointers with an accuracy of up to 0.01 mm. The diameter of the specimen before and after fracture was measured by a micrometer with an accuracy of up to 0.005 mm. The elongation tests enabled the change in mechanical properties (σ_B - yield strength, $\sigma_T^{0.2}$ - yield point, ψ_k - reduction in area) on cold deformation to be established for specimens having undergone various degrees of preliminary deformation for the two methods of extrusion. Considerable attention was paid to the change in microstructure of extruded articles. Micro-sections were made of specimens which had been deformed to various degrees by the two extrusion methods, and microhardness tests were carried out in a PMT-3 machine (Ref 7). In order to avoid work hardening, the sections were electrolytically polished by a method suggested by Popilov et al. (Ref 6). The following metals were

Change in the Mechanical Properties of Non-Ferrous Metals and Alloys in the Process of Extrusion by a High Pressure Liquid

studied:- aluminium AD1 (0.25% Fe, 0.29% Si), copper M2 (99.76% Cu) and the alloy AMG (3.89% Mg, 0.36% Fe, 0.52% Si). The materials were annealed prior to deformation. The properties of the metals in their original condition are shown in a Table (p 248). The graphs of Figs 1, 2 and 3 show changes in mechanical properties of AD1, M2 and AMG specimens having undergone a preliminary deformation by high pressure liquid extrusion. In Fig 1 the change in σ_B for AD1, M2 and AMG with increase in the extent of preliminary deformation ψ_{np} is shown. In Fig 2 the change in $\sigma_T^{0.2}$ for the above three alloys with increase in the extent of ψ_{np} is shown. In Fig 3 the change of coefficient of reduction of area ψ_k for the above alloys with increase in degree of ψ_{np} is shown. Fig 4 is a photomicrograph of copper, deformed by liquid-extrusion under high pressure:- a - annealed Cu; b - $\psi_{np} = 0.5$;

Card 3/5 B - $\psi_{np} = 0.712$. In Fig 5 the distribution of micro-

Change in the Mechanical Properties of Non-Ferrous Metals and Alloys in the Process of Extrusion by a High Pressure Liquid

hardness H_μ along the cross sections of Cu rods, liquid-extruded at various degrees of preliminary deformation through a die with an entry angle of 22° 30', is shown. (D - rod diameter, d - diameter of the cross section). 1 - annealed metal; 2 - liquid extrusion ϕ_{np}=0.5; 3 - liquid extrusion ϕ_{np} = 0.624; 4 - liquid extrusion ϕ_{np} = 0.712. In Fig 6 the distribution of H_μ along the cross section of Cu rods extruded by two methods through a die with an entry angle of 22° 30' is shown:- 1 - extrusion by liquid ϕ_{np} = 0.5; 2 - extrusion by plunger ϕ_{np} = 0.5. In Fig 7 the distribution of H_μ along the cross section of Cu rods (d - diameter of cross section of liquid-extruded rods, ϕ_{np} = 0.5 const) extruded through dies with different angles:- 1 - $\alpha = 5^\circ$; 2 - $\alpha = 60^\circ$; 3 - $\alpha = 22^\circ 30'$; 4 - $\alpha = 40^\circ$; 5 - annealed metal. As a result of the above experiments, the authors have arrived at the following conclusions:

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1. Cold deformation of metals in liquid-extrusion under

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high pressure increases their strength, whilst preserving their plasticity.

2. The mechanical properties obtained after cold deformation, which are evident in tensile testing, are identical for both extrusion methods.

3. The distribution of deformation along the cross section of a liquid-extruded rod is more uniform than that of a plunger-extruded one.

4. The shape of the instrument influences the distribution of deformation in the liquid-extrusion of metals. It has been found that there are optimum die angles for obtaining a uniform deformation along the cross section of a rod and the best surface properties of the metal.

There are 7 figures, 1 table and 9 Soviet references.

ASSOCIATION: Laboratoriya sverkhvysokikh davleniy AN SSSR (Laboratory for Super-Pressures, Ac.Sc. USSR)

SUBMITTED: February 14, 1958

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000204810010-5"

25(1) SOV/25-59-8-7/48

AUTHOR: Beresnev, B.I., Engineer

TITLE: Liquid Forms Metal

PERIODICAL: Nauka i zhizn', 1959, Nr 8, p 16 and p 1 of the centerfold (USSR)

ABSTRACT: The author describes a new method of shaping metals using liquid. This method is based on the replacement of the rigid punch by a liquid under high pressure (Figure II). The procedure was developed by the Institut fiziki vysokikh davleniy Akademii nauk SSSR (Institute of High-Pressure Physics at the Academy of Sciences of the USSR). Tests have shown that the new method has many advantages compared with the usual punch method (Figure I). The loss in energy for overcoming the effect of friction force is reduced; e.g. if for changing the form of aluminum material by a punch, a force of 18 tons per sq cm is needed, so on

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Liquid Forms Metal

using liquid only a 4.5 ton pressure is required. The metal can be punched in a cold state, and its properties do not change. The liquid's film protects the surface of the metal from destruction and the die from abrasion. Contrary to the stamping method, any length may be given to the articles regardless of their shape. The high-pressure liquid is obtained by means of a hydrocompressor, designed at the Institute of High-Pressure Physics at the AS USSR and is already used in industry. The forming of metal occurs in a simply designed container. To prevent the pressure in the container at the beginning of the process from surpassing the pressure needed for the outflow of the metal, an intermediate apparatus - a receiver - in which the liquid, compressed up to high pressures, is accumulated between the container and hydrocompressor. The energy accumulated in the receiver, makes possible a high-speed process of up to some hundreds of meters per second. There are 3 diagrams.

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28 (5)

AUTHORS: Beresnev, B. I., Vereshchagin, L. F., Ryabinin, Yu. N. SOV/32-25-6-30/53

TITLE: Method of Investigating the Effect of the Hydrostatic Pressure Upon the Mechanical Properties of Deformed Metals (Metod izucheniya vliyaniya gidrostaticheskogo davleniya na mekhanicheskiye svoystva prodeformirovannykh metallov)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 6, pp 736-737 (USSR)

ABSTRACT: The effect of pressure upon the other mechanical properties of metals which were exposed to an intensive plastic deformation under high pressure is of special interest. For these investigations a method was suggested in the present case which provides a compression of the metal under universal hydrostatic pressure. Compression takes place in a special device (Fig 2) into which the container for the high pressure is fitted (Fig 1). The latter is divided into two vacuums; the sample is inserted in such a manner that it forms sort of conical stopper between the two vacuums. The mode of operation consists in a slow pressure release of the liquid filled into the two vacuums under high pressure in the lower vacuum; thus a difference in pressure between the two

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Method of Investigating the Effect of the Hydrostatic Pressure Upon the Mechanical Properties of Deformed Metals

SOV/32-25-6-30/53

vacuums occurs which causes a compression of the sample (as it is between the two vacuums) and a plastic flow takes place in the sample. A hydraulic compressor was used for this purpose (10000 atm) and aluminum AD 1 samples were investigated. With increasing compression pressure also the plasticity of aluminum increases (Fig 3, Diagram) which was found in an extension of the sample under normal pressure following the compression. There are 3 figures and 2 Soviet references.

ASSOCIATION: Laboratoriya fiziki sverkhvysokikh davleniy Akademii nauk SSSR (Laboratory of Physics of Ultra-High Pressure of the Academy of Sciences, USSR)

Card 2/2

PHASE I BOOK EXPLOITATION SOV/4750

Beresnev, B.I., L.F. Vereshchagin, Yu.N. Ryabinin, and L.D. Livshits

Nekotoryye voprosy bol'shikh plasticheskikh deformatsiy metallov pri vysokikh davleniyakh (Some Problems of Large Plastic Deformations of Metals at High Pressures) Moscow, Izd-vo AN SSSR, 1960. 79 p. Errata slip inserted. 3,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut fiziki vysokikh davleniy.

Resp. Ed.: S.I. Ratner, Doctor of Technical Sciences; Ed. of Publishing House: K.P. Gurov; Tech. Ed.: L.A. Lebedeva.

PURPOSE: This booklet is intended for technical personnel engaged in the extrusion of metals.

COVERAGE: The booklet presents a summary and analysis of the results of experiments in the investigation of plastic deformation of metals under high pressures. These experiments were conducted during the last few years at the Institut fiziki vysokikh davleniy AN SSSR (Institute of the Physics of

Card

High Pressures of the Academy of Sciences USSR) as part of a program for studying the physics of solids under high pressures. F.F. Voronov, V.A. Shapochkin, and Ye. V. Zubova collaborated with the authors in carrying out experiments at the instutute. The authors discuss the effect of hydrostatic pressures on the plasticity of metals, the flow of metals in extrusion by high-pressure liquid, the mechanical properties of metals extruded by this method, and the use of this method in the extrusion of fancy shapes and tubing. There are 52 references: 47 Soviet, 4 English, and 1 German.

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1-12 DD

S/170/60/003/012/004/015
B019/B056

AUTHORS: Beresnev, B. I., Vereshchagin, L. F., Ryabinin, Yu. N.

TITLE: Conditions of Flow and Change in the Mechanical Properties of Metals During Their Extrusion by High Pressure Liquid

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 12, pp. 43-48

TEXT: Experiments are reported of carrying out metal extrusion directly by means of a high-pressure liquid, without using intermediate elements. The authors built a test device, by means of which experiments under pressures of up to 10,000 atm were carried out. The selection of the liquid plays an important part, and in Table 1 results obtained by previous experiments on commercial-grade aluminum of the type АД 1(AD1) (99.3% Al, 0.7% Fe+Si+Cu) are given. The extrusion pressures of a number of metals are given in Table 2. From experiments concerning the most favorable conditions obtainable it followed that the most favorable inlet angle for all metals investigated here is about 15° (45° in extrusion with conventional methods), which is much more favorable for conditions of

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Conditions of Flow and Change in the Mechanical Properties of Metals During Their Extrusion by High Pressure Liquid

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friction. Further, a considerable decrease of extrusion pressure from 18,000 kg/cm^2 to 4,500 kg/cm^2 was observed, as well as an improvement of the tensile strength of from 10.9 to 18 kg/mm^2, and a considerably more uniform distribution of microhardness over the cross section of the material extruded by this method. The surface quality is also better than in the case of a conventional method. There are 4 figures, 2 tables, and 5 references: 4 Soviet and 1 German.

ASSOCIATION: Institut fiziki vysokikh davleniy, g. Moskva (Institute of the Physics of High Pressures, Moscow). Institut fiziki metallov AN SSSR, g. Sverdlovsk (Institute of the Physics of Metals, AS USSR, Sverdlovsk)

SUBMITTED: January 30, 1960

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000204810010-5"

69383

S/136/60/000/04/022/025
E193/E283

18.5100

AUTHORS: Beresnev, B. I., Vereshchagin, L. F., and Ryabinin, Yu. N

TITLE: On Extrusion of Metals With the Aid of Liquid Under High Pressure

PERIODICAL: Tsvetnyye metally, 1960, Nr 4, pp 84-85 (USSR)

ABSTRACT: The results of investigation on plastic flow of metals, subjected to high hydrostatic pressure, have indicated the possibility of modifying the present extrusion process by replacing the rigid ram with a liquid under high pressure. The principle of the classical extrusion process is illustrated in Fig 1a. Fig 1b shows the modified process; in this case the billet (2), placed in the container (1), is forced through the die aperture (3) by liquid supplied from the high-pressure generator. Of course, arrangements can be made for the metal emerging from the die aperture, not straight in the surrounding atmosphere, but into a vessel in which high hydrostatic pressure is maintained; this arrangement is illustrated in Fig 1v. These two variants of the new extrusion method were studied in the Institutes of Physics of High Pressures and Metal Physics of the AS USSR, with the view of establishing the

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optimum operating conditions. The first problem to be investigated was associated with the fact that not only the magnitude of pressure necessary to force the metal through the die, but also the quality of the extruded metal, are affected by the nature of the liquid employed. The viscosity of some liquids, subjected to high pressure, rapidly increases and a liquid that has been "solidified" in this manner can damage the extruded material; it is for this reason that only liquids whose viscosity is unaffected by high pressure can be used in this application. To lower the extrusion pressure, it is advisable to apply a thin layer of a lubricant on the extrusion billet. (Quite satisfactory results were obtained with water as the high-pressure liquid and hypoid oil as the lubricant). It was established that when high-pressure liquid is used in extrusion, it is necessary to distinguish between the initial and steady (static and dynamic extrusion) conditions. The transition from the former to the latter is accompanied by a sudden and large drop of the pressure required. The energy, stored in the source of high pressure, accelerates the extruded metal

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so that it leaves the die at rates as high as several hundred m/sec. Consequently, the volume of extruded material can considerably exceed the capacity of the high pressure generator. In the new extrusion method there is no friction between the billet and the container walls and the friction between the metal and the die is considerably reduced; this cannot but reduce the magnitude of pressure necessary to extrude the metal. This has been confirmed experimentally. Thus, for instance, in the case of aluminium, extruded in an ordinary press to

$$\phi = \frac{F - f_o}{F} = 0.9$$

(ϕ - degree of deformation, F - cross-section area of the billet, f_o - cross-section area of the extruded rod), a pressure of 18 000 kg/cm^2 was necessary; a pressure of only 4500 kg/cm^2 was required in the new method. Some of the defects of material extruded by the standard method are associated with friction between the extruded metal and the walls of the container and the die; since

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in the new method, friction is limited to minimum, one should expect more uniform deformation of the extruded metal, and this also has been confirmed by experimental results. It was found, in addition, that the mechanical properties of the material extruded by this method are considerably improved. Thus, for instance, aluminium extruded by the new method to $\phi = 0.9$, had UTS 1.7 higher than in the as-cast condition; This increase in strength was attained without significant reduction of ductility, the reduction of area of the extruded material being 0.62. In the course of the investigation reported in the present article, a press capable of extruding profile shapes by the new method has been constructed. It was concluded that the methcd described has great practical possibilities. There is 1 figure.

Card 4/4

BERESNEV, B.I.; IVKOV, V.P.

High-pressure hydraulic compressor for laboratories. Prib.i tekh. eksp. 6 no.5:162-165 S-O '61. (MIRA 14:10)

1. Institut fiziki metallov AN SSSR.
(Compressors)

1.1200 1413

S/126/61/011/001/011/019
E193/E483

AUTHORS: Beresnev, B.I., Bulychev, D.K. and Rodionov, K.P.

TITLE: Specific Features of Extrusion of Metals at Elevated Temperatures With the Aid of Pressurized Fluids

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.1, pp.115-122

TEXT: The limits of application of the process in which deformation-resistant alloys are extruded with the aid of hydrostatic pressure are set at present by the maximum power rating of the high pressure generating equipment. While it is true that the extrusion pressure can be greatly reduced by increasing the temperature of the extruded metal, this expedient cannot be used until the effects of temperature on the fluid medium, used in the process under consideration, and on the parameters of the process are known. It was for this reason that the investigation described in the present paper was undertaken. A special extrusion press was constructed for this purpose in which pressures up to 10000 kg/cm^2 could be attained and in which provision was made for heating both the container and the metal to temperatures $\leqslant$ 400°C. The liquid medium, delivered under pressure from a hydraulic

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compressor, is fed through a receiver into the extrusion head, illustrated schematically in Fig.1. The extrusion billet (9) is set in the die (10) and then inserted in the container (7), filled already with the appropriate working liquid. To prevent mixing of the working liquid with that fed from the compressor, a return ball valve (3) separates the container from the receiver (1). A nut (12) ensures pressure-tight fit between the die and its seating in the container. A conical, cut-off valve (8) prevents a sudden drop of pressure in the container when the metal is forced out of the die aperture. The extruded metal, working liquid and the die are heated by an electric furnace (6) mounted directly on the container. The temperature of the die and extruded metal is measured by a thermocouple (12) with the accuracy of ± 5°C. High-alloy steels 45ХНМФА (45KhNMFA) and 3Х2В8 (3Kh2V8) were used as the materials of the container and die, respectively. All experiments described in the present paper were carried out on an aluminium-base alloy АД1 (AD1) containing 0.23% Si and 0.25% Fe

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which was extruded through a die with the die angle $2\alpha = 90°$ and the die aperture diameter of 4.715 mm. The object of the first series of experiments was to determine to what extent the extrusion pressure at various temperatures is affected by the nature of the working liquid. The results are given in Fig.2, where the extrusion pressure P kg/cm^2 (required to attain reduction of area $\Psi = (F - f_o)F = 0.72$) is plotted against the temperature (°C), graphs 1 to 6 relating to the following working media: 1 - transformer oil; 2 - 75/25 mixture of kerosene and transformer oil; 3 - 50/50 mixture of kerosene and graphite; 4 - solidol; 5 - graphite; 6 - 50/50 mixture of solidol and graphite. (Graphs 1' and 2', representing the theoretical temperature-dependence of P, were constructed on the assumption that P depends only on the mechanical properties of the extruded metal and is not affected by the variation of the properties of the working medium.) In the case of transformer oil (graphs 1, 1'), it will be seen that the extrusion conditions

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deteriorated with raising temperature (higher P is required) whereas they improved when the kerosene/graphite (graphs 3, 2') or kerosene/transformer oil (graphs 2, 2') mixtures were used. Since the experiments described above were conducted for a constant degree of deformation, the next series of experiments consisted in extruding the alloys studied in the 75/25 mixture of kerosene and transformer oil at 20, 150 and 300°C to various degrees of total deformation. The results confirm the previously established fact that the relationship between P and $S_f = \ln F/f_o$ (where F and f_o denote the cross-section areas of the extrusion billet and extruded rod, respectively) is linear. The results of the next series of experiments, in which the combined effect of temperature and the nature of 30 various working media (pure substances and their mixtures) on the magnitude of P was investigated, indicated that the substances studied can be divided into two groups, Group I consisting of substances which increase P at elevated temperatures and Group II comprising substances in which P

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decreases with rising temperature. The substances in Group I represent high-boiling point mineral oils containing a larger or smaller proportion of fatty acids which form a stable lubricating film at low, but not at high, temperatures. The effect of fatty acids content on the lubricating properties of a 25/75 mixture of transformer oil and kerosene, at various temperatures, is illustrated in Fig.5, where the extrusion pressure P (kg/cm^2) at 20 (crosses) and 120°C (dots) is plotted against the oleic acid content (%) in the above mixture used for extruding aluminium ($\psi = 0.72$). Since it has been stated by some Soviet workers (Ref.12,13,15) that thermal stability of lubricating films can be increased by the addition of Cl-, S- or P-bearing components, the present authors studied the effect of 5% addition of CCl_4 on the properties of transformer oil. When the above mixture was used, the extrusion pressure at 120°C was equal to that required at 20°C; however, the pressure required when working with this mixture at 20°C was 4700 kg/cm^2 against 3700 kg/cm^2 required when pure

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transformer oil was used. The substances in Group II comprise kerosene, ethyl alcohol, water and graphite flakes. Even at room temperature, the first 3 of these substances cannot form a stable lubricating film under conditions of critical or semi-fluid friction. Consequently, the fact that lower P is required at high temperature to extrude aluminium with the aid of these media must be attributed to the decrease in the strength of aluminium at elevated temperatures. Most interesting results, obtained in the course of the present investigation, were yielded by experiments in which mixtures of substances, belonging to either one or both groups discussed above, were used. In the case of mixtures containing one substance of each group, the extrusion pressure at room temperature was somewhere between those corresponding to pure substances. The same applied to mixtures of substances belonging to either group, used both at room and elevated temperatures. However, when a mixture of substances from different groups was used at elevated temperatures, at a certain concentration (usually > 50%) of the

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substance lowering the extrusion pressure at high temperatures, the extrusion pressure for that mixture was lower than that corresponding to either of the substances used alone. Although the causes of this effect are not yet understood, it was used as a basis for the formulation of mixtures most suitable for the application under consideration. The maximum reduction in extrusion pressure was attained when a 50/50 mixture of graphite and solidol or hypoid oil was used. The thickness of the lubricating film in the die aperture, measured at room temperature during the steady stage of the process, was 8 to 10 microns in the case of mineral oils, 3 to 4 microns for kerosene, water and alcohol and 12 microns for graphite; the corresponding figures at 120°C were 10 to 12 microns, 6 to 7 microns and 15 microns respectively. The thickness of the lubricating film at the moment when the metal just begins to flow through the die is 2 to 3 times less, and it is pointed out by the present authors that the values of extrusion pressures quoted in the present paper relate to this stage of the

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extrusion process taking place under conditions of semi-fluid friction, whereas fluid friction conditions exist during the steady stage of the process. During the final stage of the present investigation, the effect of the working medium on the quality of extruded material was studied. It was found that with increasing extrusion pressure which causes an increase in the viscosity of the working liquid, the tendency of the metal to fracture increased. The nature of the defects depend on the extrusion temperature. Extrusion at room temperature under $P = 4500$ kg/cm^2 resulted in pronounced "kinking" of the rod. Extrusion at 150°C with water, alcohol or kerosene used as the working media, resulted in flaking off of the surface layers of the extruded rod. Finally, if the critical temperature of the working medium was exceeded, bringing about a breakup of the lubricating film, seizure took place and smaller or larger chunks of metal were torn from the surface of the extruded rod. However, when the optimum working media and correspondingly low extrusion pressures were used, extruded rod was

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Specific Features of Extrusion of Metals at Elevated Temperatures With the Aid of Pressurized Fluids

obtained which was free from surface defects and which had surface finish corresponding to class 13 of the ГОСТ (GOST) specifications. Acknowledgments are made to Assistant Mechanic V.P.Ivkov for his assistance. There are 7 figures and 16 Soviet references.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: June 7, 1960

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S/126/61/011/004/020/023
E073/E535

18.8200 1413, 1454, 1418, also 2108

AUTHORS: Ryabinin, Yu. N., Beresnev, B. I. and Demyashkevich, B. P.

TITLE: Change in the Magnetic Properties of Iron Deformed by Extrusion with a Liquid Under High Pressure

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.4, pp. 630-633

TEXT: Recent investigations of Bridgman and the authors of this paper have shown the effectiveness of the method of extrusion of metals with liquid under high pressure on changing the mechanical properties of metals. So far, no data were available on the mechanical properties of metals extruded by applying a degree of deformation which considerably exceeds the limit contraction in the neck of tensile test specimens. The work described in this paper was carried out to elucidate this problem. The method used was the same as described in an earlier paper (Ref.3). Since the upper limit of pressures was 10 000 kg/cm^2, successive extrusion was applied for obtaining larger degrees of deformation, i.e. metal that has already been deformed was used for producing specimens for

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the next extrusion experiments. The extrusion was by means of dies with an entry cone of 15°, the pressure applied at each stage was approximately 6000 kg/cm^2, using as a working medium a mixture of kerosene (1/3rd) and transformer oil (2/3rds). The metal was then used for producing tensile test specimens. This enabled determining the mechanical properties of iron after various degrees of preliminary deformation. In addition, polished sections were produced for studying the structure and also for measuring the microhardness along the cross-section. Pure commercial iron (C - 0.07%) was deformed in 15 passes to an extent of $S_f = \ln (F/f_o) = 3.88$ (F - initial cross-section of the blank, f_o - final cross-section of the rod). The limit plasticity of the iron in the annealed state, determined by tensile tests was S_f=1.76. Thus, it was possible to determine the mechanical properties of the metal at degrees of deformation which were 2.2 times as large as those corresponding to the limit plasticity under atmospheric pressure. The results have shown that with increasing preliminary deformation the strength of the metal increases but its ductility decreases. Fig.1 shows characteristic tensile test curves for

specimens of commercial iron with preliminary deformations of S_f = 0, 0.784, 2.06 and 3.88 (curves 1 to 4 respectively), K, kg vs. Δl, mm. Fig.2 shows the changes in these characteristics and in the microhardness as functions of the preliminary deformation S_f. It can be seen that with increasing S_f the strength characteristics increase appreciably. Thus, the strength of iron can be increased from 35 kg/mm^2 (S_f = 0) to 98 kg/mm^2 (S_f = 3.88). The character of these dependences leads to the conclusion that although the intensity of work hardening decreases with increasing deformation, there is a possibility of further increasing the strength of the metal. Photographs of polished specimens show that during the process of deformation the ferrite grains stretch in the direction of flow of the material and there is a predominance of intracrystalline deformation right up to the highest values of S_f. Admixtures which in the annealed state are distributed along the grain boundaries are intensively broken up but remain distributed along the grain boundaries. There are 4 figures and 4 Soviet references.

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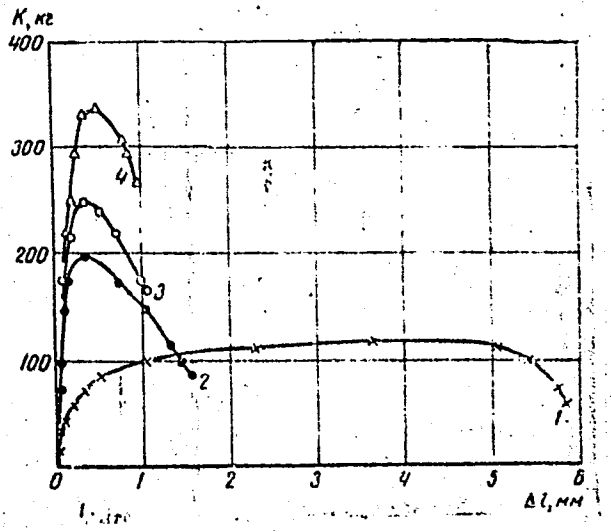
Change in the Magnetic Properties... S/126/61/011/004/020/023
E073/E535

ASSOCIATIONS: Institut fiziki vysokikh davleniy AN SSSR (Institute of High Pressure Physics AS USSR) and Institut fiziki metallov AN SSSR (Institute of Physics of Metals AS USSR)

SUBMITTED: August 6, 1960

Fig.1



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S/126/62/013/006/018/018
E111/E192

1.1310

AUTHORS: Bulychev, D.K., and Beresnev, B.I.

TITLE: Extrusion of cast iron by high-pressure liquid

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.6, 1962, 942-944

TEXT: The authors report investigation of high-pressure extrusion of ordinary high-strength, magnesium-innoculated and bismuth-innoculated grey irons. Deformation and changes in hardness at 12000 atm were studied. The results show that ordinary grey irons with lamellar graphite cannot gain appreciably in plasticity when deformed by high pressure liquid; above 45% plastic deformation their hardness falls sharply. For innoculated irons with spheroidised graphite 74% plastic deformation is not the limit. At up to 30-40% deformation intensive strengthening occurs. Hardness measurements of these irons indicated that intensive hardening occurs until the deformation of 30-40% is reached and that in this respect these irons behaved similarly to the innoculated irons exposed to

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uniaxial compression studied by L.I. Markovskaya et al., (FMM, v.11, 1961, no.2).
There are 2 figures and 1 table.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals, AS USSR)

Institut fiziki Zemli AN SSSR
(Institute of Physics of the Earth, AS USSR)

SUBMITTED: Octoner 28, 1961

Card 2/2

BERESNEV, B.I.; BULYCHEV, D.K.

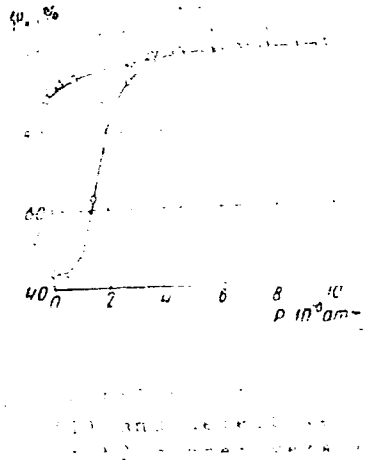
Mechanical properties of aluminum and copper after extrusion by high pressure fluids. Fiz. met. i metalloved. 16 no.1:117-123 Jl '63. (MIRA 16:9)

1. Institut fiziki metallov AN SSSR i Institut fiziki Zemli AN SSSR.

(Extrusion (Metals))
(Nonferrous metals—Testing)

L 16301-65
ACCESSION NR: AP4046094

ENCLOSURE: 01



(1) and defective (2) specimens
of M2 copper versus hydrostatic
pressure

Card 3/3

ACCESSION NR: AP4010755 S/0020/64/154/001/0086/0087

AUTHOR: Livshits, L. D.; Ryabinin, Yu. N.; Beresnev, B. I.; Marty*nov, Ye. D.

TITLE: A new relationship between the elastic limit and pressure

SOURCE: AN SSSR. Doklady*, v. 154, no. 1, 1964, 86-87

TOPIC TAGS: elastic limit, high pressure metallurgy, axial tension of materials, rate of deformation

ABSTRACT: The authors have investigated the elastic limits of various steels and of brass under high pressure. The ir method of investigation differs from that previously used by a very high rate of deformation. The elastic limit E (the natural logarithm of the ratio of areas of the specimen cross sections before and after rupture) was measured as a function of pressure p. In the previous work (mainly by Bridgman), a proportionality between E and p has been

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ACCESSION NR: AP4010755

found in many metals and alloys. It is shown in the present work, that in some materials there is a relationship of a new type between E and p. At lower pressures, there is almost no effect of p on E. The rate of axial deformation has no effect on the dependence of the elastic limit on pressure. Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki Zemli im O. Yu. Shmidta Akademii Nauk SSSR (Institute for the Earth Physics).

SUBMITTED: 05Apr63 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: PH, ML NO REF SOV: 003 OTHER: 001

Card 2/2

BERESNEV, B.I., kand. tekhn. nauk

Research in the field of hydrostatic extrusion of metals; meetings with British specialists. Vest. AN SSSR 35 no.9: 79-81 '65. (MIRA 18:9)

L 3400-66 EPA(s)-2/EWT(m)/EWP(w)/EPF(c)/EPF(n)-2/T/EWP(t)/EWP(b)
~~IJP(c) JD/JG~~

ACCESSION NR: AP5024209 UR/0020/65/164/003/0541/0544

AUTHORS: Livshits, L. D.; Beresnev, B. I.; Genshaft, Yu. S.; Ryabinin, Yu. N.

TITLE: Change in strength of several substances in the region of polymorphic transitions under pressure 33 32 B

SOURCE: AN SSSR. Doklady, v. 164, no. 3, 1965, 541-544

TOPIC TAGS: polymorphic transition, rubidium chloride, silver nitrate, limestone, calcium carbonate

ABSTRACT: The effect of pressure on RbCl, $AgNO_3$, and limestone was studied. The investigation is an extension of previous work on Bi-Sn alloys published by the authors (DAN, 161, 5, 1965). Axial compression of specimens was determined at high hydrostatic pressures. The specimens were of cylindrical shape, 8-10 mm in diameter, and had a length-to-diameter ratio of 1 to 1.5. Photographs of the deformed samples are presented and stress-strain curves are shown graphically (see Fig. 1 on the Enclosure). It is concluded that pressure affects the strength of different materials differently during polymorphic transitions. Thus the resistance to compression of RbCl increases with pressure, that of limestone

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L 3400-66

ACCESSION NR: AP5024209

increases also, but more slowly, and that of $AgNO_3$ shows a decrease with increase of pressure. Orig. art. has: 3 graphs and 1 photograph.

ASSOCIATION: Institut fiziki Zemli im. O. Yu. Shmidta, Akademii nauk SSSR (Institute of Geophysics, Academy of Sciences, SSSR)

SUBMITTED: 01Feb65 ENCL: 01 SUB CODE: SS

NO REF SOV: 003 OTHER: 001

Card 2/3

L 3400-66

ACCESSION NR: AP5024209 ENCLOSURE: 01

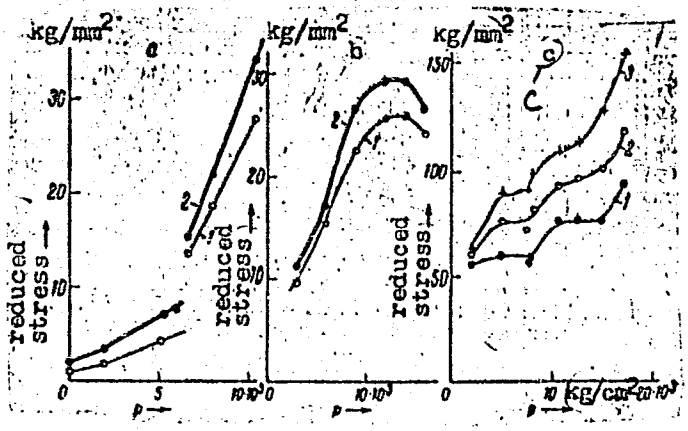

Fig. 1. Dependence of reduced stress on pressure for constant residual deformation (δ = const.). a- RbCl: 1 - δ = 3%; 2 - δ = 10%; b- $AgNO_3$: 1 - δ = 2%; 2 - δ = 10%; c- limestone: 1 - δ = 2%; 2 - δ = 5%; 3 - δ = 10%

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L 09507-67 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) PDN/JD/IW

ACC NR: AT6023743 (A,N) SOURCE CODE: UR/2755/66/000/005/0173/0188

AUTHOR: Martynov, Yo. D.; Borosnev, B. I.; Bulychev, D. K.; Yovstyukhin, A. I.; Rodionov, K. P.; Ryabinin, Yu. N. 37 34 841

ORG: none

TITLE: Apparatus for the extrusion of metals using a high pressure fluid 15

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chistykh metallov, no. 5, 1966, 173-188

TOPIC TAGS: metal extrusion, high pressure extrusion, hydraulic fluid

ABSTRACT: The article gives design details of an extrusion apparatus of the the type shown in Fig. 2.

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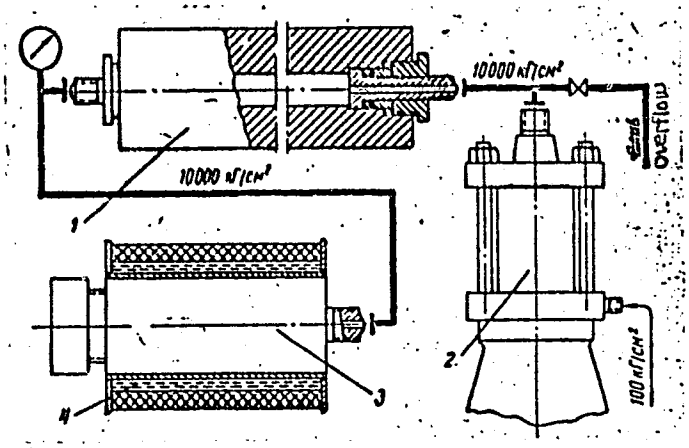

Fig. 2. Scheme of extrusion unit for pressure up to 12,000 kg/cm^2. 1--reservoir; 2--hydrocompressor; 3--container; 4--electric furnace

The unit consists basically of a container connected between a reservoir and a hydrocompressor, and a liquid-gas accumulator (not shown in Fig. 2). The article also

L 09507-67
ACC NR: AT6023743

3

gives detailed drawings of the extrusion die and the container. It then passes on to a theoretical consideration of design calculations for high pressure vessels. Calculated results show that steels EI643, 45KhNMFA, and 15Kh2GN2TRA are suitable materials for fabrication of high pressure vessels, while with a vessel wall thickness greater than 100-120 mm, steels 33KhNZMA and 30KhGSNA are preferred. For work at temperatures from 300-500°C, steels 3Kh2V8, 40KhNMA, 23Kh2NVFA, and others can be used. "The work was done by coworkers of the Institute of Earth Physics AN SSSR (Institut fiziki Zemli AN SSSR), Moscow Engineering Physics Institute (Moskovskiy inghenergo-fizicheskogo institut), and Institute of Metal Physics AN SSSR (Institut fiziki metallov AN SSSR)." Orig. art. has: 10 formulas, 5 figures and 2 tables.

SUB CODE: 11,13/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 002

Card 3/3 LC

BERESNEV, G.A. (Moskva); SARRAK, V.I. (Moskva); ENTIN, R.I. (Moskva)

Effect of temperature and interstitial impurities on energy scattering during small shifting of dislocations in iron. Izv. AN SSSR. Met. no.6:111-119 N-D '65. (MIRA 19:1)

1. Submitted February 12, 1965.

L 1626-66 EWT(m)/EWP(w)/T/EWP(t)/EWP(b)/EWA(c) IJP(c) JD
ACCESSION NR: AP5021948 UR/0126/65/020/002/0317/0319
546.72:539.67:539.374

AUTHOR: Beresnev, G. A.; Sarrak, V. I.

TITLE: Effect of plastic deformation on the amplitude dependence of the internal friction of iron

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 2, 1965, 317-319

TOPIC TAGS: internal friction, material deformation, amplitude, iron, crystal lattice

ABSTRACT: The effect of plastic deformation on the change in the (deformation-) amplitude-dependent internal friction Δ_H at temperatures of from 20 to -160°C in constant longitudinal magnetic fields of different intensity was investigated for commercial iron containing 0.025% C, 0.20% Si, 0.12% Mn, 0.01% S, 0.004% P, and 0.02% Al. Internal friction was measured by recording the damping of the natural torsional vibrations of 0.8 mm diameter wire specimens at a frequency of ≈0.8 cps. It was found that magnetoelastic scattering markedly decreases as a result of plastic deformation (curve 1, Fig. 1). This is because the deformation involves a considerable increase in the number of dislocations, whose stress fields are obsta-

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ACCESSION NR: AP5021948

cles to the movement of domain walls. Curve 2 in Fig. 1 (H = 325 oersteds) characterizes only dislocation scattering. As can be seen, this increases with increasing degree of plastic deformation. Thus, as the degree of plastic information increases the proportions between the contributions of dislocation scattering and magnetoelastic scattering to the amplitude-dependent internal friction of the iron become reversed. As the temperature drops to -160°C, dislocation scattering decreases (Fig. 2); this is attributed to the increase in the resistance to the movement of dislocations with decreasing temperature. As can be seen from Fig. 2, the temperature dependence of dislocation scattering increases with increasing number of mobile dislocations as a result of the deformation. A possible explanation may be that, during the measurement of amplitude-dependent internal friction, the dislocations performing oscillatory motion with an amplitude of the order of 10^{-5}-10^{-4}, encounter the temperature-dependent resistance of the crystal lattice. Orig. art. has: 4 figures.

ASSOCIATION: Institut metallofiziki (Institute of Metal Physics); TsNIIChermet im. I. P. Bardina

SUBMITTED: 08Jun64 ENCL: 02 SUB CODE: MM, ME

NO REF SOV: 003 OTHER: 004

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L 1626-66
ACCESSION NR: AP5021948

ENCLOSURE: 01

Fig. 1. Effect of degree of plastic deformation on amplitude dependence of internal friction of iron (T = 20°C);

1 - H = 0; 2 - H = 325 oe

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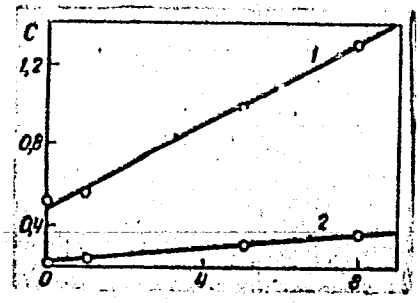
ACCESSION NR: AP5021948

ENCLOSURE: 02



Deformation, %

Fig. 2. Effect of degree of plastic deformation on the amplitude dependence of internal friction of iron (H = 325 oe):

1 - T = 20°C; 2 - T = -160°C

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L 24328-66 EWT(m)/T/EWP(t) IJP(c) JD
ACC NR: AP6010425 SOURCE CODE: UR/0020/66/167/002/0322/0325

AUTHORS: Beresnev, G. A.; Sarrak, V. I.; Entin, R. I.

ORG: Central Scientific Research Institute of Ferrous Metallurgy im. I. P. Bardin (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii)

TITLE: Temperature dependence of the resistance of iron to deformation and the dislocation mobility

SOURCE: AN SSSR. Doklady, v. 167, no. 2, 1966, 322-325

TOPIC TAGS: iron, temperature dependence, crystal dislocation, crystal deformation, elastic stress, internal friction, crystal impurity, crystal lattice

ABSTRACT: To check on the causes of the strong temperature dependence of the elastic limit of metals with body-centered-cubic lattice, the authors have investigated the influence exerted on this elastic limit, taken as a function of the temperature, by the resistance of the crystal lattice itself to the motion of dislocations. The tests were

Card 1/2 UDC: 539.377

L 24328-66
ACC NR: AP6010425

made on commercial iron (0.025% C, 0.005% N) containing 0.33% Ti to bind the carbon and nitrogen into carbides and nitrides of titanium. The internal friction was measured at a frequency of approximately 1 cps. The amplitude dependent internal friction was measured at strains from 2 x 10^{-5} to 20 x 10^{-5} in a longitudinal constant magnetic field (325 Oe). Increasing the interstitial impurities from 10^{-7} to 10^{-3}% greatly increased the resitance to deformation. The authors describe the effects produced by interstitial impurities, by the changes in density of the free dislocations participating in the deformation, and by the motion of the free dislocation. It is concluded from the results that the temperature dependence of the elastic limit of iron is essentially the consequence of an increase in the resistance of the crystal lattice to the motion of the free dislocations with decreasing temperature. The influence of the impurities and of the density of the free dislocations comes into play to the extent that they change the dislocation velocity, and the density of the moving dislocations or the multiplication of dislocations. This report was presented by Academician G. V. Kurdyumov. Orig. art. has: 4 figures and 2 formulas.
SUB CODE: 20,11/ SUBM DATE: 24May65/ ORIG REF: 004/ OTH REF: 005
Card 2/2

BERESNEV, L.L.

Hamartoma of the lungs [with summary in English]. Vest.khir. 82 no.1:122-124 Ja '59. (MIRA 12:2)

1. Iz khirurgicheskoy kliniki usovershenstvovaniya vrachey (nach. - prof. P.A. Kupriyanov) Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova.
Adres avtora: Leningrad, K-9, pr. Karla Marksa, d.7/8, khirurgicheskaya klinika usovershenstvovaniya vrachey.

(LUNG NEOPLASMS, case reports
hamartoma (Rus))
(HAMARTOMA, case reports
lungs (Rus))

BERESNEV, N.F.; ROVNIN, L.I.

Megion oil field and the prospects for finding oil and gas in the Lower Vartovskiy arch. Geol. nefti i gaza 8 no. 1: 6-12 Ja '64. (MIRA 17:5)

BERESNEV, R.S., inzh.

Shop for the production of fiberboard with Soviet equipment. Der. prom. 14 no.6:20-23 Je '65. (MIRA 18:7)

1. Novo-Vyatskiy ordena Trudovogo Krasnogo Znameni domostroitel'nyy kombinat.

AUTHOR: Beresnev, S.D., Docent, Sverdlovsk Medical Institute

SOV-3-58-9-12/36

TITLE: From the School Lesson to the Vuz Course (Ot shkol'nogo uroka k vuzovskomu kursu). From the Experience in Teaching Foreign Languages (Iz opyta prepodavaniya inostrannykh yazykov)

PERIODICAL: Vestnik vysshey shkoly, 1958, Nr 9, pp 51-52 (USSR)

ABSTRACT: The basic aim in studying a foreign language at a non-linguistic vuz is to be capable of reading and understanding the literature of the respective specialty, and to acquire some skill in elementary conversation. The author presents some suggestions for teaching a foreign language which are based on the experience of the Chair for Foreign Languages of the Sverdlovskiy meditsinskiy institut (Sverlovsk Medical Institute). During the first year the student is familiarized with the theory of the language and is taught to use it. Both lectures and practical exercises are used. For the former, 16-18 hours per year are assigned (in the 1st course), the rest of the time being devoted to practical training. The lectures are on phonetics, morphology, syntax and lexicology with elements of the science of style which serve as a basis for acquiring skill in the language. Lectures alter-

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From the School Lesson to the Vuz Course. From the Experience in Teaching Foreign Languages

nate with practical exercises. Practical exercises are given in 4 semesters, the material used for them being general and specialized texts. In the 3rd and 4th semesters, when the students are able to read fluently and know the grammar, principal attention is paid to vocabulary and phraseology. The author recommends that the study of foreign languages (English, German, French) be divided into 2 subjects: colloquial-newspaper style, and literary. The second subject is to familiarize the student with the scientific style of the language and make him read foreign literature on the particular speciality.

ASSOCIATION: Sverdlovskiy meditsinskiy institut (Sverdlovsk Medical Institute)

BERESNEV, S.Ye., insh.(Vitebsk)

"Manual for stationmasters" by I.D.Antoniuk, V.G.Orlov, A.V. Samsonov. Reviewed by S.E. Beresnev. Zhel. dor. transp. 40 no. 7:95-96 Jl '58. (MIRA 11:7)

(Railroads--Station service)
(Antoniuk, I.D.) (Orlov, V.G.)
(Samsonov, A.V.)

BERESNEV, S.Ye., inzh.

Results of divisional operation without locomotive dispatchers. Zhel.dor.transp. 41 no.6:64-66 Je '59. (MIRA 12:9)

1. Zamestitel nachal'nika otdela dvizheniya, gruzovoy i passazhirskoy raboty otdeleniya dorogi, g.Vitebsk.
(Railroads--Management) (Railroads--Train dispatching)

BERESNEV, S.Ye. inzh.

Use new methods in organizing the work of train dispatchers. Zhel.dor. transp. 44 no.12:77 D '62. (MIRA 15:12)

1. Nachal'nik otdela Upravleniya Belorusskoy dorogi, Minsk.
(White Russia--Railroads--Train dispatching)

YUSHCHENKO, N.R., doktor tekhn. nauk, prof. (Dnepropetrovsk); BADYUL, B.K., kand. tekhn. nauk, dotsent (Dnepropetrovsk); YEGORSHINA, Ye.G., kand. tekhn. nauk, dotsent (Dnepropetrovsk); STEPANOV, V.V., kand. tekhn. nauk, dotsent (Dnepropetrovsk); PAPAKHOV, Yu.V., assistent (Dnepropetrovsk); BERESNEV, S.Ye., inzh. (Minsk)

Merits and shortcomings of the textbook on the mechanization of loading and unloading operations. Zhel dor. transp. 45 no.7: 92-94 Jl '63. (MIRA 16:9)

1. Nachal'nik otdela gruzovoy sluzhby upravleniya Belorusskoy dorogi (for Beresnev).

KORNIYENKO, A.M.; SHTEL'MAKHOV, M.S.; GEYLER, Z.Sh.; BERESNEV, V.A.; KOTLIK, S.B.; GORFINSKIY, Kh.M.; ZEL'DIN, Yu.R.; KURGIN, Yu.M.; BELYAYEV, V.G.; ZAK, P.S.; ZAYTSEV, A.A.; LI, A.M.; SKVORTSOV, L.N.; LUTTS, R.R.; KHVINGIYA, M.V.; NINOSHVILI, B.I.; SEMENCHENKO, D.I.; SUKHANOV, V.B.

Soviet inventions in mechanical engineering. Vest.mashinostr. 45 no.11:87-88 N '65. (MIRA 18:12)

AMIROVA, S.A.; PECHKOVSKIY, V.V.; BERESNEVA, T.I.

Kinetics of the reduction of iron-vanadium spinel by hydrogen. Zhur.prikl.khim. 38 no.6:1247-1252 Je '65. (MIRA 18:10)

1. Permskiy politekhnicheskiy institut.

BERESNEV, V.I.; VERESHCHAGIN, L.F.; RYABININ, Yu.N.

Mechanical properties of aluminum subjected to preliminary plastic deformations at high hydrostatic pressures [with summary in English]. Inzh.-fiz. zhur. no. 9:119-122 S '58. (MIRA 11:10)

1. Laboratoriya fiziki sverkhvysokikh davleniy AN SSSR, g. Moskva i Institut fiziki metallov AN SSSR, g. Sverdlovsk.
(Aluminum--Testing)

SOV/138-58-7-1/19

AUTHORS: Lebedev, A.V., Fermor, N.A., Selivanovskiy, S.A., and Beresnev, V.N.

TITLE: Some Technical Properties of Chloroprene Latexes Depending on the Size of Particles and the Saturation of the Adsorption Coatings (Nekotoryye tekhnologicheskiye svoystva khloroprenovykh lateksov v zavisimosti ot velichiny chastits i nasyshchennosti adsorbtsionnykh obolochek)

PERIODICAL: Kauchuk i rezina, 1958, Nr 7, pp 1 - 5 (USSR)

ABSTRACT: The rate of ionic deposition, the rate of syneresis in water, the rate of drying and setting of coatings and physico-mechanical properties of the gel of chloroprene latexes having particles of various sizes, were investigated. To some latex samples soap was added in order to compare the properties of latexes: a) at an equal degree of saturation of the globules of the coating and b) at an identical weight ratio of the emulsifier to the polymer. Polymerisation was carried out in a 50-litre apparatus at 25 - 30 °C (Table 1). Initiators and emulsifiers usually used during the synthesis of chloroprene latexes were used (Refs 14 and 15). The size of the particles and the degree of saturation was determined by

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adsorption titration of the latexes with solutions of sodium oleate and resin soap (Refs 9 and 10). The physico-mechanical properties of the raw gel were defined with a Kublanov dynamometer (Ref 12) and the physico-mechanical properties of dry vulcanised coatings with a Shopper dynamometer according to the VNIISK methods (Ref 11). Heat ageing of the latexes was effected in an air thermostat for 36 hours at 70 °C. An analysis of data given in Table 2 and Figures 1-3 shows that the rate of ionic deposition in the initial period (within the limits of experimental error) is equal for all tested samples; in the following period it is higher for latexes with large particles. The weight ratio of the raw and dry gel for all samples and in all stages of ionic deposition remains approximately constant (about 2.2). The average rate of ionic deposition increases with increasing degree of saturation of the globules with emulsifiers. If the latex contains very small particles and the globules are less saturated with emulsifiers, syneresis of the gel proceeds more quickly and more completely in the aqueous

medium (Table 3). From simple calculations, it can be established that within the limits of investigated sizes of particles and of degree of saturation, the rate of syneresis and its extent are approximately proportional to the specific exposed surface of the polymer particles; the proportional coefficient is considerably higher for latexes stabilised with rosin soaps. When infra-red irradiation is applied the rate of drying of latex coatings is higher if large-particle latexes are used. However, the rate of separation of moisture decreases with increasing degree of saturation of the adsorption layers with emulsifiers. The amount of deposits and the reduction coefficient increase slightly during drying when the sizes of the particles and the degree of saturation of the adsorption layers increase. The specific elongation of gels from large-particle latexes is in all cases lower than the corresponding values for highly dispersed latexes. It decreases with increasing degree of saturation of the adsorption layers with the polymer globules. The physico-mechanical values of vulcanised layers decrease

Some Technical Properties of Chloroprene Latexes Depending on the Size of Particles and the Saturation of the Adsorption Coatings

with increasing soap content in the polymers; at equal soap content they do not (within the limits of experimental error) depend on the sizes of the particles in the latex. The raw gel, as well as the vulcanised layers from latexes, stabilised with sodium resinate, have better physico-mechanical properties than the corresponding gels and coatings stabilised with sodium oleate. This is due to the different solubilities of calcium salts of rosin and oleic acids in chloroprene. There are 3 figures, 3 tables and 15 references, 5 of which are Soviet, 7 English and 3 German.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka im. S.V. Lebedeva (All-Union Research Institute for Synthetic Rubber im. S.V. Lebedev)

Card4/4 1. Chloroprenes--Polymerization 2. Chloroprenes--Physical properties 3. Chloroprenes--Mechanical properties 4. Chloroprenes --Test results 5. Synthetic rubber--Preparation

KALAUS, A.Ye.; RABINERZON, M.A.; FAYNSHTEYN, M.S.; BERESNEV, V.N.

Production of oil rubber without thermal plasticizing. Biul. tekh.-ekon.inform. no.5:23-26 '59. (MIRA 12:8)
(Rubber, Synthetic)