

Transactions of the Institute (Cont.) SOV/1316

Novikov, I.I., and L. I. Dautova. Study of the Equilibrium
Diagram of the System: Copper - Nickel - Silicon 274

Dem'yanikov, I.G. Rapid Method of Quantitative X-ray Spec-
trum Analysis 282

Kalinin, S.K., E. Ye. Fayn, I. G. Grinman, and G.B. Zhilinskiy.
Spectroscopic Determination of Rare Earths in Minerals 288

Grinman, I.G., S.K. Kalinin, V.L. Marzuvanov, and E. Ye. Fayn.
Study of Electric-arc Output for Spectrum Analysis 296

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SOV/137-59-5-10733

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, pp 181 - 182
(USSR)

AUTHOR: Pressnyakov, A.A.

TITLE: On Some Problems of the Interaction of Components in Binary
Structural Diagrams

PERIODICAL: Tr. In-ta yadern. fiz. AS KazSSR, 1958, Nr 1, pp 175 - 186

ABSTRACT: The author discusses the dependence of the type of structural diagrams on the position of its components in Mandeleev's periodic table. Interactions of the copper sub-group elements (Cu, Ag and Au) with elements of the II - IV periods of the periodic system were investigated. The region corresponding to the solidus line was taken as the basis of the structural diagram. On the abscissa axis, characteristic points were projected corresponding to the region of transition of the alloy from the liquid to the solid state. The line obtained with the particular point

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On Some Problems of the Interaction of Components in Binary Structural Diagrams
plotted on it was named "the characteristic structural diagram". Such characteristics, arranged correspondingly to the order of elements in the Mendeleev table, indicate the regular change in the structural diagram type in connection with the position of elements in the periodic table. ✓

L.V.

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PRESNYAKOV, A.A.

Theory of slip cones. Trudy Inst. iad. fiz. AN Kazakh. SSR 1:187-
196 '58. (MIRA 12:2)
(Deformations (Mechanics)) (Rolling (Metalwork))

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Translation from: Referativnyy zhurnal, Metallurgiya, 1959, No 5, p 189 (USSR)

AUTHOR: Presnyakov, A.A.

TITLE: On the Connection of Plastic Properties of Metal Systems With Their Chemical and Phase Compositions

PERIODICAL: Tr. Insta yadern. fiz. AS KazSSR, 1958, Vol 1, pp 197 - 216

ABSTRACT: Data are given, generalizing the research of a number of authors into the plasticity of various metals and alloys. On account of the considerable difference in T_g , the comparison of the plasticity of various metals and alloys was carried out at homologous temperatures over the entire range. Investigations into the temperature effect on the plasticity of a series of pure metals show that the plasticity changes depend on the structure of the crystalline lattice. Plasticity decreases considerably with higher alloying of metal-based solid solutions, ^bcrystallizing in cubic lattices. The transition from binary solid solutions to more complex ones is connected with a greater plasticity decrease than in the case of binary solid solutions of similar

Card 1/2

SOV/137-59-5-10788

On the Connection of Plastic Properties of Metal Systems With Their Chemical and Phase Compositions

alloying. Components which produce saturated solid solutions of low concentration with the base, reduce metal plasticity to a higher degree than the components contained in large amounts in solid solutions of cast metals and alloys. Changes in the plasticity of natural industrial alloys depend on the effect of the alloying factor, connected with changes in the crystalline lattice of the metal and of the structural factor.

Z F.

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SOV/137-59-5-10979

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, pp 218-219
(USSR)

AUTHORS: Presnyakov, A.A., Chervyakova, V.V.

TITLE: On the Ductility¹⁰ of Binary¹¹ Al-Cu¹¹ Alloys in Cast State at High
Temperatures¹⁶

PERIODICAL: Tr. In-ta yadern. fiz. AS KazSSR, 1958, Vol 1, pp 234 - 236

ABSTRACT: During static tension tests of Al and its alloys a minimum of Ψ was observed at 100°C; higher test temperatures caused an increase in Ψ . At 400°C the value of Ψ for all the alloys was of the same order as for pure Al (85 - 100%). During dynamic tension tests, the minimum of ductility shifted toward the side of higher temperatures (200°C). At \sim 500°C a secondary temperature zone of reduced ductility appeared. It is stated that the minimum of ductility observed in Al-Cu alloys at 100 - 200°C is regular for all solid solutions with a hexagonal-centered-cubic lattice.

✓B

L.Ye.

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Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 223 (USSR)

AUTHOR: Presnyakov, A.A., Sakharova, N.S.

TITLE: An Investigation Into the Microhardness of Some Cast Alloys on Zinc and Tin Base

PERIODICAL: Tr. In-ta yadern. fiz. AS KazSSR, 1958, Vol 1, pp 237 - 243

ABSTRACT: The author investigated the microhardness of the following alloys: Zn-Al ($\leq 5.5\%$ Al), Zn-Cu ($\leq 3\%$ Cu), Sn-Pb ($\leq 38\%$ Pb), Sn-Sb ($\leq 10\%$ Sb), Sn-Zn ($\leq 9\%$ Zn) and Cu-Ni ($\leq 90\%$ Ni). The alloys were studied in cast state prior to and after homogenization and also in the deformed state after annealing. The spread of microhardness values was taken as a measure of the segregational heterogeneity of the solid solution. It is pointed out that for systems with limited solubility of components in the solid state, the microhardness method can be used to determine the composition of the alloy where the secondary phase appears. It is asserted that heterogeneity of the cast grain according to the composition in Zn and Sn alloys

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SOV/137-59-5-11039

An Investigation Into the Microhardness of Some Cast Alloys on Zinc and Tin Base

can not be completely eliminated, neither by extended homogeneization nor by plastic deformation with subsequent annealing. It is noted that a considerable grain growth occurs in extended homogeneization of Zn alloys (360°C, 250 hrs) until samples of monocrystalline cross-sections are obtained (5 - 8 mm in diameter). The possibility is admitted of applying the microhardness method for controlling the chemical composition of alloys.

L.Ye.

Card 2/2

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18.1270

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 224 (USSR)

AUTHORS: Presnyakov, A.A., Mironenko, Yu.P.

TITLE: On the Ductility of Some Zinc-Base Alloys in Cast State

PERIODICAL: Tr. In-ta yadern. fiz. AS KazSSR, 1958, Vol 1, pp 244 - 248

ABSTRACT: It was established that Zn and Zn alloys containing up to 2% Al have two temperature zones of brittleness and two zones of higher ductility. In Zn the first zone of brittleness and higher ductility during static tension is located in the ranges of 20° - 150°C and of 150° - 130°C, respectively. During dynamic tension it is located within the ranges of 20° - 100°C and of 100° - 180°C. The second zone of brittleness and higher ductility of Zn was observed at 230° - 370°C and of 370° - 410°C, respectively, in the case of static tension and at 230° - 370°C and 250° - 400°C during dynamic tension. In alloying Zn with aluminum the first zone of brittleness (equal for static and dynamic tension) is shifted toward the lower temperature range (20° - 75°C) and the second zone of lower ductility corresponds to temperatures

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Presnyakov, A.A.

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445