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Metalurgia International 2/2008

ISSN 1582 – 2214

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ABSTRACT

Metalurgia International 2/2008

Key words: process in solar furnaces

VIZUREANU PETRICĂ, SAMOILĂ CORNELIU: The analysis of heating process in solar furnaces

Metalurgia International (vol. XIII), no.2, 2008, p. 5

The fundamental research character of the paper is given by the development of a new and original concept for Romania: solar thermic systems or solar furnaces which will be used with different terrestrial applications: water heating, electric power production through photoelectric conversion, water distillation, obtaining of fuel and chemical products through bio-conversion, producing of electric power through thermodynamic cycle, material processing, etc.

Key words: sickle, curb, ferrite, archeology

FLORENTINA POTECAȘU, ANA DONIGA, DIMA OVIDIU: Proofs of metal processing during I B.C – I A.D. centuries in the Cascioarele – Greaca – Prundu zone

Metalurgia International (vol. XIII), no.2, 2008, p.11

The paper presents the characterization of some iron objects from the Brăila's and Dunării de Jos Călărași museums' patrimony from the establishments of the I B.C. - I A.D. centuries near the Danube, in the Căscioarele-Greaca-Prundu zone.

The archeological traces were brought to light thanks to the pains and efforts of some enthusiasts archeologists [1] in between the years 1987 – 1991. There are mostly domestic ceramic objects, to which one can add a very small number of bone ornaments, tools (sickles, penknives) and iron weapons (arrow tips).

Key words: aluminum alloy, superplasticity, thermomechanical processing, flow stress, strain rate.

Ana-Luciana RUS, FRUNZĂ DAN: Grain refinement and superplasticity of 2024 aluminum alloy

Metalurgia International (vol. XIII), no.2, 2008, p.17

Fine stable microstructures can be developed by thermomechanical processing of 2024 commercially aluminum alloy. The plastic deformation of this material was investigated in a temperature range between 450-480°C and the strain rate range of 1×10^{-3} to 1×10^{-2} s⁻¹. The deformation characteristics were correlated with the results of microstructure investigation. The material have a potential for superplastic behavior during deformation at temperatures of about 460°C and 480°C. Tensile elongations to failure in excess of 200% were obtained in strain rate range 1×10^{-2} to 1.5×10^{-3} s⁻¹ at 460°C and 5×10^{-3} s⁻¹ at 480°C, and materials may be bulge formed. The grain size after thermomechanical processing was 5-8 μm. The microstructure exhibited exceptional stability at 460°C, due to the presence of precipitates of Al-Mn.

Key words: cast iron rolls, chemical composition, hardness, mathematical interpretations, mathematical molding, technological parameters, working surface, regression analysis, graphical interfaces and addenda

KISS IMRE, MAKSAY STEFAN: Mathematical approaches in the area afferent to the cast iron rolls manufacturing process

Metalurgia International (vol. XIII), no.2, 2008, p.22

The research was aimed to establish calculus methodologies of values for the technological parameters in the manufacturing process of the half-hard rolling mill rolls, obtained through the simplex classical cast of the iron with nodular graphite, for which the mechanical features of rolling mill rolls have the required values.

Starting from the lamination equipments aspects, from the form of rolls, the technological interest zones and the structure, which assures the exploitation property, it was establish, through molding, the mathematical description of a direct influences, and in final, through successive determinations, an optimum.

Key words: costs based on orders, direct costs, indirect costs, accountancy methods

Key words: corporate memory, knowledge management, knowledge based systems, knowledge base, business intelligence

MUREȘAN MIHAELA: The corporate memory – a challenge for the metallurgy

Metalurgia International (vol. XIII), no.2, 2008, p. 33

The efficiency and the competitiveness of the metallurgical enterprise rely on the information and knowledge management, i.e. the corporate memory of the organization. The corporate memory of the organization represents an intangible asset of the organization, stored and permanent developed by the direct contribution of the intellectual capital of the enterprise. The transition to the knowledge society involves major internal and external processes re-engineering based on new paradigms of the information and knowledge management. One of the goals of the article is to offer a perspective to the knowledge creation and capitalization process, in a metallurgical domain. From this particular view, our purpose is to focus on the major benefits of this approach and the reusable concepts in other environments.

Key words: labor market, integration, human capital, spiritual capital, labor services, labor contract.

ELVIRA NICA: The labor market in the actuality of European integration

Metalurgia International (vol. XIII), no.2, 2008, p. 39

The labor market, we can define it as a coherent system of relations between the supply's bearers and the labor services demand being executed by the spiritual capital. This system is influenced by multiple institutional legislative, training-educative, social-economic and cultural variables, manifested on long and very long term. We understand from this that the labor services must be officially recorded by the habilitated institutions, this not excluding at the present time the possibility that some labor services are not recorded officially, this leading to an occult, subterranean, parallel or the grey system of the labor market. Therefore, the labor market is a specific market of the labor services, that can be provided by the spiritual capital, in a very diversified game.

Key words: matrix composite

IVĂNUȘ RADU CRISTIAN: Mechanical properties of Al-Zn-Mg-Cu Matrix composite reinforced with SiC particles

Metalurgia International (vol. XIII), no.2, 2008, p. 47

This paper describes a study of the mechanical properties of as-cast and heat treated AA7075 alloy particulates containing silicon carbide (SiC) particulates of size 100-150 μm and of contents ranging from 0% by 6% by weight. The vortex method of production as employed in which the SiC particles were poured into the vortex created by stirring the molten metal by means of a mechanical agitator. Subsequent homogenizing heat treatment was performed at 320 °C for durations of 1, 2, 3 and 4 hours, respectively. The results of this study revealed that as SiC composition was increased, there was significant increase in the ultimate tensile strength (UTS) and hardness of the composite, accompanied by reductions in its ductility and impact strength. Heat treatment was found to improve significantly the ductility and impact strength of the composite, but cause reductions in its UTS and hardness. An attempt is made in the paper to provide explanations for these phenomena.

Key words: Titanium, Silicon, Carbide, Coating, Sputtering, Composition, Tribology

MUNTEANU DANIEL, VAZ F., LOPES C., CARVALHO S., ANA VETEANU, BORCEA B., IONESCU C., MUNTEANU A.: Researches on the dependence between processing conditions and some tribological properties of Ti-Si-C thin films

Metalurgia International (vol. XIII), no.2, 2008, p. 51

Ti-Si-C thin-films were prepared by d.c. reactive magnetron sputtered on (AISI M2) steel samples, at 200°C. The depositions were carried out from Ti targets, one with some Si and the other with C pieces incrustrated in the erosion zone, working in a simultaneously mode, under the variation of d.c. power applied to the targets. During the deposition processes, all the samples were biased with a bias voltage of -70 V. The atomic composition of as deposited samples was measured by electron probe microanalysis

LEPĂDATU V. GHEORGHE: The financial administration accountancy method and the cost calculation method, based on orders
Metalurgia International (vol. XIII), no.2, 2008, p. 29

The cost calculation method, based on orders is applied in industrial units with individual production and in that with mass products, like machine tools, pumps, domestic devices, furniture industrial units, machine tools repair a.s.o.

(EPMA) in a Cameca SX-50 apparatus. A tribological characterization for the prepared thin-films has been done, taking into account the different measurements of roughness, static friction coefficient and wear. The results revealed that there is no clear correlation between the tribological parameters, and the general wear behaviour could be explained considering the films composition. Thus, the best results were registered for C/Si ratio (at.%) between 2.2 – 5.2, corresponding to a current ratio I_{TiC}/I_{TiSi} (A) between 1.4 – 2.9.

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