

1. **E. V. Panfilov. Development of castings production technology cast iron with a vermicular form of graphite for the automotive industry.**

One of the main tasks of the domestic market is considered mechanical engineering - improving the quality of the feeling, reliability and durability of the carmobiles while simultaneously increasing them production, weight and cost reduction. The solution to this problem is inextricably linked with the introduction of more efficient structural materials, in partnews of high-strength cast iron with spherical and the vermicular form of graphite. Factors that ensure a wide the use of PMG castings, which are satisfactory casting properties, high ratio of yield strength to time resistance, increased cyclical viscosity, increased wear resistance in cocombined with high strength, heatbone, corrosion resistance compared to production of cast iron with plate graphite

Keywords: improving the quality of automotive castings, modification, cast iron with spherical graphite, casting properties of cast iron with spherical and vermicular graphite

2. **R.K. Mysik, S.V. Brusnitsyn, A.V. Sulitsin, I.A. Sokolov, I.A. Gruzdeva, A.A. Grechuk, V.V. Morgunov, G.Yu. Savin. Production of continuous contact copper wire Upcast blanks**

The analysis of the structure of cast billets with a diameter 20 mm from copper obtained in a continuous casting system using Upcast technology. The macrostructure of the sample in the transverse and longitudinal sections was studied. Hardness of a copper contact wire obtained by traditional technology and the proposed technology. In this regard, there is a potential possibility of using a technological scheme for manufacturing a contact wire by drawing a cast copper billet obtained by Upast technology.

Keywords: contact wire, drawing, cast copper billet.

3. **V. I. Verbitsky. Complex pulses in air-pulse molding machines — formation and efficiency**

Based on the study of a computer model of a pneumaticpulse system with two valves, it is shown how one-, two-, and three-phase air pulses are formed. The nature of the change in the pulse gradient for a different number of phases is established, the acceleration speed of the molding sand down and the course of compaction of the layers of the mixture are determined. In this system, with an increase in the number of pulse phases, the overall compaction of the mixture decreases, but the uniformity of the density distribution along the height sharply increases. For complex pulses, energy savings are also achieved.

Keywords: mathematical model, air impulse, impulse gradient, speed, mixture density.

4. **I.A. Kovaleva, N.A. Khodosovskaya. Investigation of corrosion failure of tubing aft er operation in oil wells.**

Pieces from three trubings with different serviced time were analyzed. Quality characteristics of the tubing steel were determined. Results of micro-roentgen-structural analysis were presented. Causes of tubing corrosion damage were analyzed.

Keywords: development of corrosion process, time of service, piping, metallographic examination, nonmetallic inclusions, sulfides, microradiography structural analysis, phase composition.

5. **E.N. Zhirkov, I.E. Illarionov, Sh.V. Sadetdinov, D.A. Pestryaev. Infl uence of some aminoborate compounds on properties metalphosphate mixtures.**

The results of a study on the effect of aminoborate compounds: tetraborate diaminopropanol (TBDAP), tetraborate diethylenediamine (TBDEDA) and pentaborate hexamethylene tetramine (PBHMTA) on the

technological properties of aluminophosphate (AF) and magnesium phosphate (MF) binders and mixtures are presented. Experimental data on the technological properties of modified metal phosphate binders and mixtures are obtained, which are of scientific interest in the principles of controlling their properties. Aminoborate-aluminum-phosphate, aminoborate-magnesium phosphate binders and mixtures that meet the requirements of practice, which are recommended for the manufacture of molding and core mixtures in foundry, have been developed.

Keywords: aluminophosphate, magnesium phosphate, binders, mixtures, tetraborate diaminopropanol, tetraboratediethylenediamine, pentaborate hexamethylene tetramine, survivability, residual strength, knockout work.

6. **A.I. Demchenko, V.A. Korovin, I.O. Leyshun.** About problems arising when filtering heat-resistant alloys and ways of their solutions on the example of Inconel-718 alloy smelted in the conditions of Rusolymet PJSC.

The analysis of literature data. It is shown that melt filtration is an effective way to reduce the amount of non-metallic inclusions in the melt and increase the level of mechanical properties in the finished casting. An Inconel 718 alloy was smelted experimentally, one ingot was cast through a double ceramic foam filter, and the other without a filter. Templates were selected from each ingot for microstructural analysis and microhardness measurements. Microstructural analysis was performed on NEOPHOT 32. Microhardness was determined according to GOST 9450—76. It was established that the metal after filtration does not contain non-metallic inclusions and oxide films, and titanium carbonitrides are evenly distributed in the metal volume. An increase in microhardness was detected on samples of filtered metal in comparison with unfiltered at a level of 15 to 40%. After applying a special casting device, a six-fold increase in the life of the foundry was obtained.

Keywords: mechanical properties, non-metallic inclusions, Inconel 718

7. **A.Yu. Barinov, V.N. D'yachkov, K.V. Nikitin, I.Yu. Timoshkin, B.N. Tukabajov, V.A. Shohin.** Restoration of bronze products of art purposes with the use of additive technologies for the casting to forms of cold-hardening mixtures.

The results on the use of additive technologies for the restoration of bronze castings for artistic purposes in the forms of cold-hardening mixtures are presented.

Keywords: additive technologies, casting in forms of cold-hardening mixtures, restoration, cast products of art purposes.

INFORMATION

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