

Invitation to the congress

1. **I.A. Dibrov.** To the 30th anniversary of the Russian Association of Foundry Workers and 20th anniversary of the magazine «Foundry of Russia»

In April 2022, the 30th anniversary of the formation of the Russian Association of Foundry Workers (RAL), which is the legal successor of the All-Union Association of Foundry Workers, was celebrated. Currently, there are 46 regional (Regional, regional, Republican), 12 scientific and technical committees in the structure of the RAL. The Association has its own print and information bodies — the magazine "Foundry of Russia" and a website ruscastings.ru, who turned 20 years old this year.

2. **I.O. Leushin, L.I. Leushina, P.M. Yavtushenko.** Vaporization in liquid-mobile self-hardening mixtures

The process of pore formation plays a decisive role in the formation of the gas permeability of a liquid selfhardening mixture in the manufacture of molds and cores. The identification of factors that have a significant impact on it provides the possibility of controlling the technological processes for the production of castings using such a mixture and expands the scope of its application. In this regard, the authors present some results of their experimental studies of pore formation and formulate practical recommendations.

Keywords: liquid self-hardening mixture, casting mold, casting core, foaming, pore formation, anisotropy, gravity, mechanical vibration, gas permeability.

3. **E.N. Budanov.** US foundries are trying to catch up with Russian plants in mastering the V-process for production of large railway castings

The article assesses the development of the production of castings for freight cars in Russia and the USA. Examples of successful implemented projects based on VPF technology in Russia and the first experience of mastering similar VPF castings in the USA are shown. The nuances and main advantages of this technology for this and other groups of castings are presented.

Keywords: modernization of foundry production, vacuum film molding, quality of molds and castings, RAILWAY castings «frame» and «beam».

4. **I.E. Illarionov, T.R. Gilmanshina, E.N. Zhirkov, I.A. Strelnikov, Sh.V. Sadetdinov.** Investigation of the effect of boratophosphates on properties of graphite non-stick coatings

The results of a study of the properties of non-stick coatings based on cryptocrystalline graphite activated by borate phosphate compounds: oxy-ethane borodiphosphonate, borophosphoric acid and tetraborate sodium phosphate are presented. The conducted tests have shown that the use of graphite activated with borate phosphates in the composition of coatings makes it possible to improve the properties of non-stick coatings.

Keywords: graphite, borate phosphate compounds, oxyethanbordiphosphonate, borophosphoric acid, tetraborate sodium phosphate, mechanical activation, geometric and energetic activity of graphite, non-stick coatings.

5. **V.Yu. Kulikov, S.S. Kvon, A.A. Alina.** Determination of optimal technological parameters for obtaining a casting mold with high technological characteristics

This article determines the optimal composition of the technological parameters of the casting mold. A scheme for installing model equipment is proposed, the dependence of the gas permeability of the mold on the magnitude of the applied load on the sand-resin mixtures and sand fractions is determined. The dependence of the compressive strength of the shell on the heating temperature in the process of shaping under various loads is also determined. The roughness and gas permeability of the mold due to pressure changes during the formation of the shell were revealed. It is shown that the application of a static load on the sand-resin mixture in the process of thermal action on it (shell formation) significantly reduces the roughness (up to RZ 50...60) compared to other casting methods.

Keywords: sand-resin mixtures, shape, flask, sample, sand, gas permeability, roughness

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