

REFRACTORY LININGS BASED ON MULLITE FOR APPLICATION IN FOUNDRY

Prstić A.⁽¹⁾, **Aćimović-Pavlović Z.**⁽²⁾, **Terzić A.**⁽³⁾, **Pavlović Lj.**⁽⁴⁾

⁽¹⁾ AMI-Beograd, Kneza Miloša 86, Serbia, lucijap@amiline.rs

⁽²⁾ Faculty for Technology and Metallurgy, University of Belgrade, Karnegy st. 4, Belgrade, Serbia, zagorka@tmf.bg.ac.rs

⁽³⁾ Institut For Materials Testing, Vojvode Mišića Bl. 43, Belgrade, Serbia, anja.terzic@institutims.rs

⁽⁴⁾ Institute for Technology of Nuclear and other Raw Mineral Materials, Franchet d'Esperey 86, Belgrade, Serbia, ljubica.pavlovic1@gmail.com

Various possibilities for the development of the new mullite-based refractory linings which can be applied in casting process were investigated and presented in this paper. Optimization of the refractory lining composition design with the controlled reologic properties was achieved by application of different lining components and by alteration of lining production procedure. Mullite was used as a high-temperature filler. The mullite sample was tested by the following methods: X-ray diffraction analysis, diffraction thermal analysis and scanning-electron microscopy. The shape and grain size were analyzed by the program package for image analysis OZARIA 2.5. It was proved that application of this type of water-alcohol-based lining had a positive influence on surface quality, structural and mechanical properties of the castings

of Fe-C alloys obtained by casting into sand molds, according to the method of expandable patterns (Lost foam casting process).

These researches results are optimal lining compositions and their preparation procedures with the goal of achieving positive effects on castings quality. Further studies should be done with the goal of determining the correlation between linings composition and layers thickness and the castings structural and mechanical characteristics. By developing refractory linings on mullite base and optimizing technological parameters of Lost foam casting process, the castings with a priori defined quality i.e. desired properties could be obtained with significantly lower price cost with respect to the castings founded in sand.