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### ABSTRACT

#### ANALYSIS AND EVALUATION OF MECHANICAL AND THERMAL DEFORMATION OF MOLDING SANDS WITH SELECTED BINDERS

There are a number of factors associated with molding materials that have an impact on the processes associated with the production of the finished castings. The growing requirements for quality and efficiency of production make the work on new solutions, both in the field of binding agents and the assessment of their properties, a current issue. The following work focuses on the analysis and assessment of mechanical and thermal deformation of selected molding sands classified as second generation molding sands, i.e. bonded with binders. Both molding sands based on inorganic and organic binders were subjected to research. The main goal of the research was to perform the analysis and assessment of the impact of the binder used, its quantity, curing time and the impact of additives added, on the selected parameters. Thermogravimetric tests (binders and molding sands), bending strength (after ½, 1, 2, 4 and 24h), mechanical deformation - *elasticity* (after ½, 1, 2, 4 and 24h), thermal deformation - *hot distortion* (after 24h). Viscosity tests, SEM, FTiR were performed for chosen moulding sand samples. The obtained results allowed to create a list of the mechanical and thermal deformation quantities for the examined molding sands, thus facilitating the assessment of their properties and selection of the appropriate material.