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**THE INFLUENCE OF GLASSEX ADDITIVE ON PROPERTIES OF MICROWAVE-HARDENED AND SELF-HARDENED MOULDING SANDS WITH WATER GLASS**

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**Abstract**

Requirements for high castings quality cause scientific investigations leading to obtain moulding and core sands having not only good technological properties, but also being environmental friendly [1-4]. In the Department of Moulding Materials on Faculty of Foundry Engineering AGH (University of Science and Technology) there were investigations taken to elaborate new binding systems based on ecological inorganic binders. The biggest group are the moulding sands with hydrated sodium silicate called moulding sands with water glass. Unfortunately inorganic binder character causes mouldings’ low knock-out properties and their low ability to mechanical reclamation. Authors’ research on the first stage considered elaborating and patenting moulding sands with new Glassex additive having improved knock-out properties. In the previous publications, authors [5-10] showed that inserting a new additive Glassex to moulding sands with water glass carried out in ester technology improved their knock-out properties defined (measured) according to technological test [5-8] and according to retained strength examination [5, 8-10]. Authors’ research proved that microwave hardening lets lowing the binder content what makes their knock-out properties better [11-13]. In this paper the influence of different hardeners and the technology of hardening on bending strength and knock-out properties measured by retained strength investigation of moulding sand with water glass and the Glassex additive.

The applied in the article research shows:

* microwave-hardened moulding sands have better strength properties then self-hardened moulding sands. The worst bending strength has the self-hardened moulding sand with ixional SD hardener.
* microwave-hardened moulding sand with water glass and Glassex additive has much higher retained strength in the range of temperature 100-500oC than self-hardened moulding sands prepared in ester technology with all used types of ester hardeners. In the range of temperature 700-1100oC the retained strength of microwave-hardened is lower than retained strength of self-hardened moulding sands with different ester hardeners.

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