

## ABSTRACT

Technological properties and the possibility of reuse of ecological core mixtures

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**The purpose of the work** – determination of residual strength of core mixtures with sodium and aluminum phosphates, exploring options for removing from cast parts and establishing the possibility of reusing binders.

**Research methodology** - making standard samples from five core mixtures with sodium and aluminum phosphates and determining their tensile strength after thorough heating to different temperatures; water solubility studies; experiment on reusing mixtures.

**Results of the work and their novelty** - theoretically and practically established the suitability of the mixture with a binder component based on sodium tripolyphosphate to all groups of castings and the possibility of its reuse; mixture with the binder component based on aluminum sulfate completely loses strength after heating 600 °C, which greatly facilitates the removal of the cores.

**The main indicators** - the residual strength after heating within 400... 900°C of core mixtures with sodium and aluminum phosphates was determined. Mixtures with sodium phosphates have a residual strength of 0.2... 0.5 MPa, but tend to dissolve in water. The mixture with a binder component based on sodium tripolyphosphate when reused fully retains its strength at the level of 2.0... 2.5 MPa.

**Areas of application** - production of foundry cores, which are strengthened at a temperature of 150 to 300 °C, to obtain cast parts from iron-carbon and non-ferrous alloys.

**Economic efficiency** – UAH 100099.

**Predictive assumptions about the development of the object of study** - gradual extraction of polymeric sodium phosphates from household chemicals, organization of production of binders from them for foundry production and industrial introduction of reusable core mixtures.

CORE MIXTURE, PHOSPHATES, BINDING COMPONENT, RESIDUAL STRENGTH, TRIPOLYPHOSPHATE SODIUM, HEXAMETAPHOSPHATE SODIUM, SODIUM SULFATE.