ABSTRACT

Thesis: 129 p., 79 fig., 9 tab., 89 references.

Object of study – the process of making high – quality dual – layer cast iron parts with dissimilar using the influence of technological factors on the properties of melt formation and structure of the metal in the casting.

Purpose – The development process of differential modification of liquid iron in the reaction chamber mold gating system for heterogeneous functional purpose modifiers to produce two – layer casting with hard durable surface working layer and soft viscous shock-resistant matrix substrate.

Methods – Objective and put in the work caused problems of complex theoretical and experimental studies using physical modeling of dissolution modifiers in the reaction chamber mold gating system, processing of the experimental results with mostly standardized assessment methods of chemical composition, microstructure and mechanical properties of the metal.

Results of research – basic patterns established mechanisms of structure formation processes in metal modification of heterogeneous iron.

The degree of implementation – developed processes for castings in different ways tested in laboratory and industrial conditions, some of them put into production.

Areas of application – Metalworking, machine and so on.

Estimated assumption – studied engineering processes for dual-layer casting certainly have great prospects for the production of high – quality cast parts.

MODIFICATION, MICROSTRUCTURE, CASTING PROPERTIES, CRYSTALLIZATION, HARDNESS, TECHNOLOGICAL PROCESSES, DIFFERENTIATION AGENCIES, TEMPERATURE, CASTING.