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# Properties of Bearing Details Cast from Steel Materials

**Akbarjon Baymirzaev**
*PhD, Department of Materials Science and Technology of New Materials, Andijan Machine-Bulding institute, Andijan, Uzbekistan*
*Email id: akbarshoxashox@gmail.com*

**Annotation:** Study of chemical-physical, mechanical and operational properties of bearing details cast from iron-composite materials.

Activities that can be performed at a research facility include processes ranging from melting ingots to machining them.

**Key words:** research, technological, material, shaft, hardness, content, vacuum, impact viscosity, bearing details, ring, casting method.

## Introduction

The cast bearing detail is heat treated as described above. Through this, the degree of hardness is equal to 62-65 according to Rockwell.

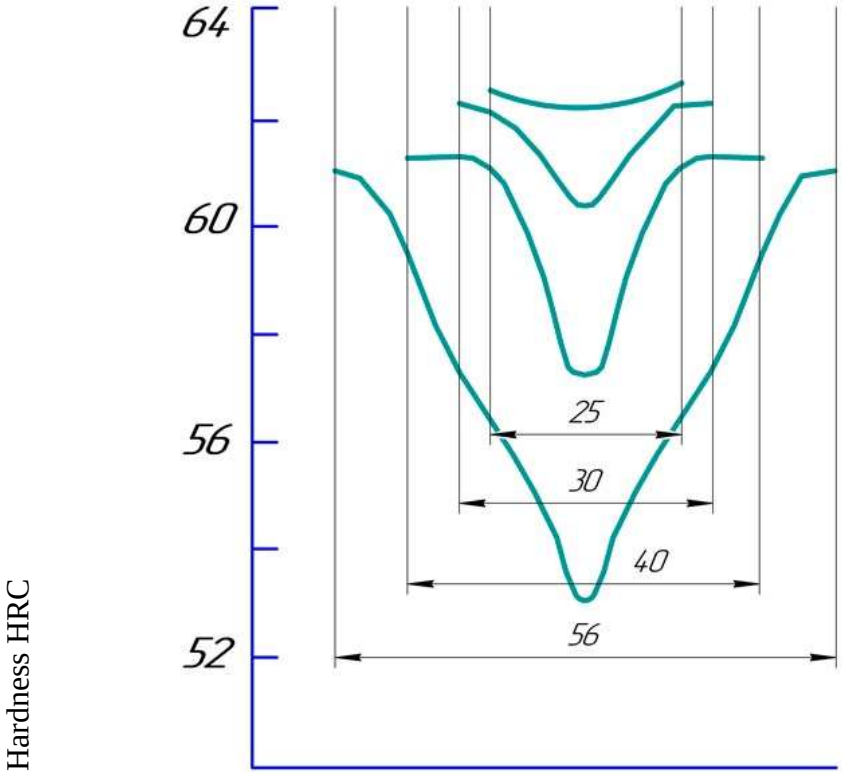
Heat treatment processes are carried out based on the following indicators.

Bearings operate under conditions of very high contact stresses, reaching 6000 MPa in some cases. Therefore, bearing steels should have a dense homogeneous structure (macrostructure), minimal amounts of non-metallic inclusions, and minimum carbide should not be uniform.

Non-metallic inclusions in bearing steel not only reduce the durability of bearings, but they are also reflected in some other indicators of bearing quality. For example, with significant contamination of iron with non-metallic inclusions, it is almost impossible to obtain a high cleanliness class of the surface of the bearing parts. Contamination of steel with non-metallic additives in tool bearings leads to loss of ease of rotation, increase of "starting torque".

**Material and Methods**

The heat treatment process is also divided into several stages and includes such processes as annealing and annealing.




In the next sections of this chapter, we will learn about bearing ring material extraction technologies and their differences

**Results**

This method is used to obtain bearing rings in large sizes. It is not possible to get such large sizes in GKM. Such bearing rings, obtained in the technology of individual production, do not lead to economic efficiency

The bearing rings obtained by the free hammering method are made at the production facilities (pneumatic, steam compressors) with the help of workbenches, and using the universal tool equipment, they have only a cylindrical shape. It is necessary to heat and punch the center of the prepared cylindrical part in one more process. It was necessary to go through more complex technological processes to make the resulting ball into a correct cylindrical shape again. Force punching metal has also had problems.

**Discussion**

Structural phases are affected by these processes. As a result, the heat treated part affects the hardness levels. Of course, heating temperatures play a key role in this.

The cast part goes from mechanical processing to thermal processing. After heat treatment, the mechanical properties of the material are studied.

Mechanical properties include its impact viscosity and hardness. We will consider the properties of abrasion resistance together with the degree of hardness. When imported bearings are used in machine-building units, their indicators are as follows:

**Heat resistance indicators of ShX15 steel**

| **Heat resistance of ShX15 steel** | | |
|---|---|---|
| Temperature, °C | Time, c | Hardness, HRC |
| 150-160 | 1 | 63 |

**Conclusion**

As a result of our research work, we have carried out scientific work on the production of bearing rings by cast method. In this case, we prepared secondary metal waste enriched with various chemical elements, and it was scientifically proven that the level of performance with the usual bearing details is quite close. More details on this are given in Chapter 3.

The results of the study show that the obtained bearing parts are recommended for use in the mechanical engineering industry, light industry, and other industries based on their physical and mechanical properties.

Production of continuous cast steel for industrial and production use by hammering is carried out at the Volgograd bearing plant, with a hammer size of 500-400mm. The implementation of such technology was applied to parts with small bearing ring sizes.

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