including high-frequency heating of the liners combined with hardening by quenching is necessary.

2. The amount of retained austenite in cast iron hardened using HFC heating must be 34-36%. Decrease or increase of this amount of \( A_{\text{ret}} \) in the martensitic cast iron base decreases the resistance to wear and scoring of cast iron liners with a high concentration of manganese (~2.0%).

3. The working-in regimen has a strong effect on the ability of the rubbing surfaces to form protective secondary structures of optimal phase composition. Preliminary "conditioning" of the surfaces by working-in at low specific loads, using a definite number of cycles, is necessary to guarantee compatibility of the elements of the rubbing pair.

LITERATURE CITED


4. N. A. Bushe and V. V. Kopytko, Compatibility of Rubbing Surfaces [in Russian], Nauka, Moscow (1981).


MARTENSITIC CAST IRONS WITH IMPROVED WEAR AND CORROSION RESISTANCE

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The wear resistance of white cast irons in corrosive media depends to a considerable degree on the chromium content in the metal base. In view of this for operation under abrasive and corrosive conditions cast irons are used with 30% Cr in which the solid solution contains >20% Cr with 1.5-2.0% C [1].

However, these cast irons exhibit marked shortcomings, i.e., low resistance to an abrasive medium. This is due to the comparatively low (<20%) content of carbides and also presence of retained austenite and ferrite in the structure.

In the cast condition the hardness of cast irons with 30% Cr does not exceed 52 HRC, which is connected with presence in the metal cast iron base of ferrite (in cast irons with 1.5-2.0% C; 0.6-2.0% Mn) and retained austenite (in cast irons with >2% Mn) (Fig. 1). The increase of hardness with increase in carbon content is connected with a reduction of the amount of ferrite in the structure.

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It is possible to increase the hardness of these cast irons by quenching. Cast irons containing more than 2% C are quenched from the austenitic region, and the change in their hardness after quenching is connected with the content of retained austenite. As a result of this by varying the carbon and manganese content and the quenching temperature it is possible to increase markedly the microhardness of the metal base and consequently the wear resistance of cast irons.

Presented in Fig. 2 are hardness diagrams for cast irons with 30% Cr in relation to quenching temperature and the carbon and manganese content.