

**Ali H. Ataiwi**

University of Technology,  
Materials Engineering  
Department, Baghdad, Iraq.  
[130001@uotechnology.edu.iq](mailto:130001@uotechnology.edu.iq)

**Zainab A. Betti**

University of Technology,  
Materials Engineering  
Department, Baghdad, Iraq

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## **Study the Microstructure and Mechanical Properties of High Chromium White Cast Iron (HCWCI) under Different Martempering Quenching Mediums**

**Abstract** *This study aims to find the effect of hydroxide mixture as a quenching medium in martempering heat treatment on microstructure and mechanical properties of high chromium white cast iron. This mixture is cheaper and more available than the ordinary nitrate mixture in Iraqi markets. High chromium white cast iron is used in mining, crushing and cement plants as mill liners and it is subjected to extreme conditions of wear and impact that cause failure, reduction in life and raise the cost of repairing. Hence it is important to improve its mechanical properties. In this study, two types of quenching mediums were used: (50% NaOH: 50% KOH ) mixture and (50% NaNO<sub>3</sub> + 50 % KNO<sub>3</sub>) mixture. The specimens were austenitized at 950°C for 1 hr then the first group was quenched in nitrate mixture, and the other was quenched in hydroxide mixture both at about 350°C for (1/2, 2,4,6,8) hr. The results showed an increase in hardness and decrease in toughness for both mixtures, and the higher hardness value was found for both of the mixtures at martempering temperature 350°C for 4hr quenching time.*

**Keyword:** *Hardness, High Chromium White Cast Iron, Martempering, microstructure, quenching mediums.*

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