

## **EFFECT OF CRYOGENIC TREATMENT ON THE MECHANICAL PROPERTIES OF COMPACTED GRAPHITE CAST IRON**

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### **Abstract**

In this study, cryogenic treatment is applied to compacted graphite cast iron which is used for clutch pressure plate in automobile. After cryogenic treatment, microstructural investigations, macro and micro hardness test and wear tests were carried out. Cryogenic treatment is applied which the cooling rate of 2 °C per minute to -196 °C and had stood at this temperature at specified times. Optical microscope and SEM techniques were used to examine the changes in the microstructure and worn surface. Rocwell B and Vickers were drawn on in determining the macrohardness and microhardness changes. Wear tests were carried out dry conditions by using ball-on-disc method for each times of cryogenic treated and untreated samples with 5 N normal load, 2,5 mm radius, 100 meters sliding distance and 10 cm/s sliding velocity. Specific wear rates of cryogenic treated and

untreated samples compared each other. Result of the comparisons, both wear rates of cryogenic treated samples decrease according to untreated samples. Test with 5 N normal load, wear resistance of the sample which cryogenic treated at 12 hours was improved %68,7.

**Keywords:** Cryogenic treatment, compacted graphite cast iron, wear

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