AUSTEMPERED DUCTILE IRON (ADI) – AN OVERVIEW

Raghavendra J.V[1], K.NarasimhaMurthy[2]

[1]Assistant Professor, Department of Mechanical Engineering, JIT, Bangalore
[2]Professor, Department of Mechanical Engineering, SVIT, Bangalore

ABSTRACT:
Austempered Ductile Iron (ADI) is obtained when ductile cast iron is accorded a special heat treatment known as "Austempering". The microstructure of ADI reveals a structure of acicular ferrite and high carbon stabilized austenite known as "Ausferrite'. ADI has emerged as a major engineering material in the world today. The major applications of ADI include Automotive, Agriculture, Nuclear, Mining and Power plants. ADI has replaced many steel castings because of deriving the benefits like high strength, wear, fatigue and fracture toughness characteristics. ADI'S Fatigue strength is typically 50% higher than that of standard ductile irons. ADI'S excellent impact and fracture toughness properties make it ideal for earth moving applications. Tensile and yield strengths of ADI are about twice those of standard ductile irons. Several researchers have reported that ADI is microstructure sensitive. The tribological and fatigue properties of ADI can be altered either by heat treatment or by alloying additions or both. In the present paper, a brief review of the current status of ADI and its applications are being discussed.

Keywords*:* Austempering, Fatigue, Fracture, Ductile iron