Analysis on Machining Characteristics of Spheroidized EN 2A Material by Plain Turning

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ABSTRACT: To study the behavior of spheroidized steels EN 2A by plain turning operation, a series of experiments have been performed on EN 2A. This Steel was brought from Al cast India limited. It is heat treated by spheroidizing for 12 hrs and subsequent machining behavior was studied. The study reveals that cutting pressure, heat generated and power consumed which act on tool during the machining operation reduce considerably after spheroidizing. It is observed that the hardness of the steel (HRB 67) reduces considerably after spheroidizing. Spheroidzing is a heat treatment process, which results in a structure consisting of globules or spheroids of carbides in a matrix of ferrite, in other words cementite of lamellar pearlite in the case of hypo eutectoid and eutectoid steels and both lamellar and free cementite in the case of hyper eutectoid steels coalesce into tiny spheroids. The degree of spheoridization depends on heat treatment temperature and holding time. The microstructure study shows that only ferrite grains were formed with increase in spherodizing time. The grain size ranges from 5 – 6. Some spherodized carbide particles were also noticed throughout the structure.

KEYWORDS: EN 2A material, Machining, Spherodizing, PCBN cutting tool

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