عنوان مقاله:

Investigation of machinability of AISI 1045 Steel under Rolled, annealed, normalized and quench-tempered conditions

محل انتشار:

همایش ملی مهندسی مکانیک (سال: 1391)

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خلاصه مقاله:

In this paper, machinability of AISI 1045 steels was studied in rolled, annealed, normalized, and quenchtemperedconditions. Machinability in turning was investigated based on cutting force and surface roughness. The microstructure of as received and Heat treated samples has been investigated by optical microscopy. Hardness and tensile tests was carried out on samples. Turning tests were performed at a depth of cut of 0.5mm, a feed rate of 0.05mm/rev, and cutting speeds of 13.89, 19.73, 27.79, 39.46 and 55.58m/min and dry conditions. Results show that the values of cutting force and surface roughness were in range 100 to 220N and 1 to 5μm, respectively. Quench-tempered sample shows the highest cutting force, while it shows the lowest surface roughness. As received sample has the lowest cutting force. By annealing and normalizing heat treatments, cutting force does no different .significantly, but surface roughness increase

کلمات کلیدی:

Machinability, Heat treatment, AISI 1045 steels, Cutting force, Surface roughness