

Effect of Surface Roughness of Pure Aluminium A1100 on the Cold Work Extrusion by Using Different Angles of Taper Die

Abstract

The study presented in this paper is focused on the effect of surfaces roughness of pure aluminium A1100 on the cold work extrusion process by three different angles of taper die. Different angles of taper die will affect the surface roughness of the workpiece. To protect the surface and to reduce friction, lubricants are often used in extrusion process [1]. Different lubricants may have different optimum taper die angle that are suitable to be applied. Two types of materials used in this experiment are steel SKD 11 for taper die and aluminium A1100 for workpiece and different angles applied are 30°, 45°, and 60°. Moreover, with respect to each angle, three different types of lubricants were used which are Daphne Draw S Series, Palm Olein, and EFB bio oil. The Universal Testing Machine and Surface Roughness Tester were used in this experiment. The result obtained from the experiment shows that at 30° of taper die angle were producing the smooth product surfaces for each lubricant and Daphne Draw S Series could reduce the surface roughness compared to other lubricant test.

Keywords; Extrusion, Lubricant, Pure Aluminium, Surface Roughness, Taper Die