

MQL MACHINING – OIL ON WATER DROPLET SYSTEM

Sabahudin Ekinović

University of Zenica, Zenica, Bosnia and Herzegovina
sekinovic@mf.unze.ba

Edin Begović

University of Zenica, Zenica, Bosnia and Herzegovina
ebegovic@mf.unze.ba

Aldin Lušija

University of Zenica, Zenica, Bosnia and Herzegovina

Keywords: MQL machining, Oil-on-water droplet, aluminium bronze, cutting forces, surface roughness.

ABSTRACT

Flood and through-tool delivering of cutting fluids have been widely used for the machining operations. The use of a large amount of cutting fluid can impact the environment and increase manufacturing costs, and possibly lead to ground contamination, excess energy consumption, the need for wet chip disposal and potential health and safety issues. Minimum Quantity Lubrication (MQL) machining involves the application of a minute amount of oil-based lubricant to the machining process in an attempt to replace the conventional flood coolant system. This paper presents a classification of MQL methods, discussing their advantages and drawback. Also, the results of measurements of cutting forces and surface roughness when machining one type of aluminum bronze using MQL, are presented. As a medium for cooling and lubricating a system of oil-on-water was used. The results show that the cutting force of less than 16%, and also parameters of surface roughness, compared to machining without the use of coolant and lubricants.