

## Burnishing of Aluminum-Magnesium-Graphite Composites

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**Abstract :** Burnishing is increasingly used as a finishing operation to improve surface roughness and surface hardness. This can be achieved by applying a hard ball or roller onto metallic surfaces under pressure, in order to achieve many advantages in the metallic surface. In the present work, the feed rate, speed and force have been considered as the basic burnishing parameters to study the surface roughness and surface hardness of metallic matrix composites. The considered metal matrix composites were made from Aluminum-Magnesium-Graphite with five different weight percentage of graphite. Both effects of burnishing parameters mentioned above and the graphite percentage on the surface hardness and surface roughness of the metallic matrix composites were studied. The results of this investigation showed that the surface hardness of the metallic composites increases with the increase of the burnishing force and decreases with the increase in the burnishing feed rate and burnishing speed. The surface roughness of the metallic composites decreases with the increasing of the burnishing force, feed rate, and speed to certain values, then it starts to increase. On the other hand, the increase in the weight percentage of the graphite in the considered composites causes a decrease in the surface hardness and an increase in the surface roughness.

**Keywords :** burnishing process, Al-Mg-Graphite composites, surface hardness, surface roughness

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