

Mechanical Polishing Process

Mechanical polishing is a process where material surfaces are improved through pressurized contact with rotating abrasive material. Varied combinations of abrasive material are utilized to achieve desired outcome. Outer circumferences and interior diameters can be effectively polished mechanically with only very minute changes in component dimensions.

Typical components requiring mechanical finishing are forgings, castings, fabricated tubular/pipe products, extrusions and plate/sheet fabrications.

Finishes range from “rough” through mirror and can be industry specific, such as stainless steel components used in pharmaceutical, medical, or food/beverage applications. Since mechanical polishing is performed in steps, raw material selection is critical. Too many, or major surface anomalies can easily add considerable cost to a mechanically polished component due to extra steps required to complete. Many components are electropolished after mechanical polishing to ensure a completely clean surface with added durability.

In many instances, finishes must achieve a certain roughness value (Ra) to be considered acceptable. Mechanical polishing is an effective process to meet specific surface roughness requirements. When Ra requirements are met, electropolishing may be included as a final step. It is important to note that in many cases, electropolishing cannot be substituted for mechanical polishing. Although electropolishing enhances component corrosion resistance and adds brightness, it will not remove weld seams, orange peel, machine tool inclusions, or pitting in base material.