

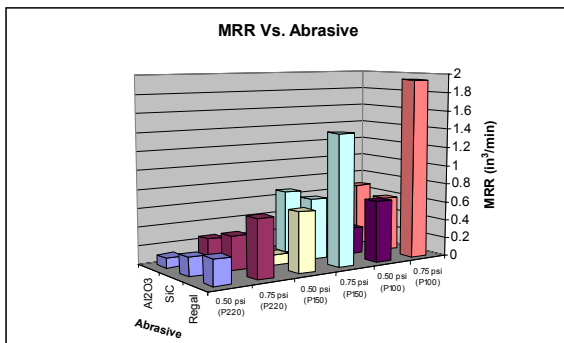
WOOD MACHINING & TOOLING RESEARCH

ABRASIVE MACHINING - Comparison between Aluminum Oxide, Silicon Carbide, and Ceramic Blend

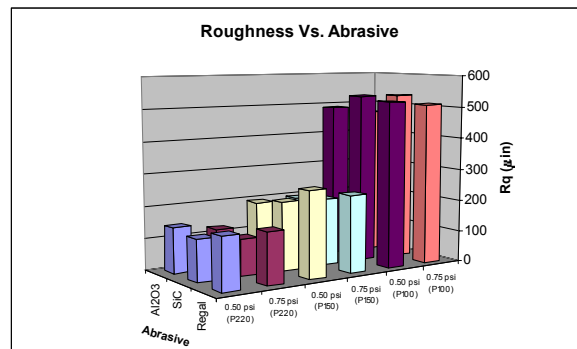
There are many parameters to be considered in the sanding process. Two were measured in this research. The first is the quantity of material that is removed during the process, called Material Removal Rate and is expressed in cubic inches per minute (in³/min). The other is the quality of the finish surface, measured by the root mean square Rq and generally expressed in micro-inches (μin).

Sanding is the process of employing coated abrasives to smooth surfaces by hand or machine methods. According to Carrano, the material is smoothed by the abrasive action of the sharp edges of the abrasive grains. The process of sanding is crucial for the quality of the end product and often is one of the most expensive operations in the process. Sanding operations can be classified as (1) *white sanding*, which includes all the sanding operations that are performed on a material prior to application of a finish; and (2) *finish sanding*, which includes all those sanding operations that occur between applications of the various finish coats. Finish sanding is performed to smooth the surface and to prepare it for the next finishing coat to adhere.

The main objective of this research is to make a comparison between different commercial abrasive sanding belts used in wood working industries, using Material Removal Rate and surface roughness as parameters to be compared in order to determine the behavior of each abrasive material under the same sanding conditions.



Material Removal Rates



Surface Quality

The Wood Machining & Tooling Research Program (WMTRP) is a multidisciplinary program involving the fields of Mechanical Engineering, Industrial Engineering, Manufacturing Engineering, Material Science, and Wood Science. The program mission is to provide the woodworking industry with personnel educated in machining and tooling technology and provide applied research results aimed at improving efficiency and wood utilization. Major program support is provided by the U.S. Department of Agriculture.

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