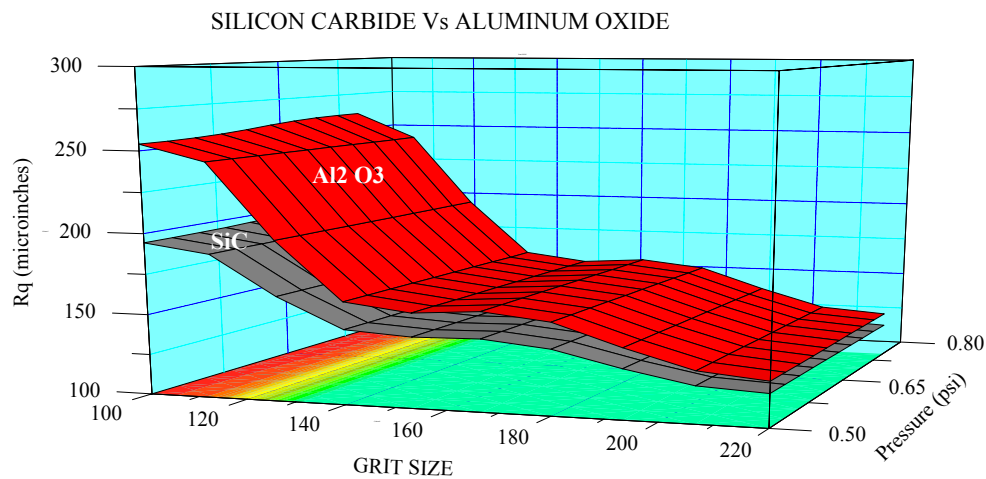


WOOD MACHINING & TOOLING RESEARCH

ABRASIVE MACHINING RESEARCH

Sanding is one of the most common practices used for smoothing surfaces in the woodworking industry. Among the wood machining processes in contoured furniture making, it is one of the most skill-based, time consuming and expensive operations. In this context, the automation of this process has been severely limited by the lack of information about the effect of key process parameters and their interactions in this operation. The objective of research in this area is to provide the necessary information to understand the relationships between the key input parameters and two of the most important responses: material removal rate and resultant surface roughness. In this research, a randomized full factorial design with local control was implemented to evaluate the impact of factor-level combinations of the following input variables: wood species, interface pressure, abrasive mineral, and sanding orientation. Through this approach, it was possible to assess the impact of interactions with respect to the desired quality characteristics of the finished workpiece. All treatments considered were replicated through a sequence of three different grit sizes. The results indicated that individual effect of pressure is significant throughout all grit size levels. In this research, silicon carbide yielded a better surface than aluminum oxide at the coarsest grit size for all species.



Performance of Abrasive Minerals With Respect to Surface Quality (Rq).

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.

For more information on WMTRP research activities please contact
 Mr. Richard Lemaster, WMTRP, Box 8005, NC State University,
 Raleigh, NC 27695. Phone: 919 515-1548, Fax: 919 513-3496
 E-mail: richard_lemaster@ncsu.edu.
 WMTRP web site: www2.ncsu.edu/wmtrp