

# Polishing

## Abrasive Maching Process

Accumet has developed several unique cutting, lapping, and polishing techniques to achieve extremely tight tolerances with repeatability and consistency from piece to piece.

Polishing is a process utilized to control the surface finish, combined with our lapping process to assure thickness identity, parallelism as well as flatness of substrates. The process is different depending upon the type of material and the physical dimensions required.

Thickness tolerances as tight as .000050" and surface finishes ranging from one tenth of a micro inch (.0000001") to 5 micro-inches (.000005"). Accumet is capable of holding tolerances as tight as 11.6 millionths (.0000116") and delivering substrates in R&D quantities as well as production quantities. Consistency and repeatability are what we've built our reputation on.

Some of the many benefits of polished substrates are the thickness uniformity and extremely smooth surface consistency from piece to piece. Thickness control of the substrate is important because many circuit line widths are designed for optimal impedance, and impedance is also dependent on the control of substrate thickness. Controlling the camber of the substrate to less than .0005" allows the optimal transfer of photo mask features allowing lines & spaces in the .0002" range. For tighter tolerances call Accumet Engineering. The surface finish as well as consistency from piece to piece allows better yields and increased performance in higher frequency applications as well as Infrared/ Visible/ UV light applications.

Material	Surface Finish (u-inches)	Thickness Tolerance	Applications
As fired 99.6% Alumina	< 4	+/-10% or +/-5%	Use for low to medium power DC & Rf circuits
Polished 99.6% Alumina	< 1	+/- .0005"	Use for low to medium power Rf & Microwave circuits
Polished 99.5% Beryllium Oxide	< 3	+/- .0005"	Use for high power DC/RF/microwave circuits
Polished Aluminum Nitride	< 2	+/- .0005"	Use for high power DC/RF/microwave circuits
Polished Fused Silica	< .1	+/- .0005"	Use for high frequency circuits requiring extremely low loss performance
Polished Titanates	< 3	+/- .0005"	RF & microwave circuits requiring high Q